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ISLANDS OF INNOVATION.

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DESPITE THE SUBSTANTIAL AND RELATIVELY COMPREHENSIVE LIST OF PRACTICES IDENTIFIED, IT APPEARS THAT JUNIOR COLLEGES, IN GENERAL, ARE DOING LITTLE EXPERIMENTATION IN THE EFFECTIVE UTILIZATION OF FACULTY SERVICES. THIS IS DUE IN PART TO THE FACT THAT UNTIL RECENTLY, THE COLLEGES HAVE HAD LITTLE DIFFICULTY IN RECRUITING FACULTY. ALSO, THE COLLEGES ARE EXPANDING SO RAPIDLY THAT LITTLE TIME AND ENERGY ARE AVAILABLE FOR PLANNING AND EXPERIMENTATION IN THE USE OF FACULTY SERVICES. EXAMPLES OF INNOVATION AND EXPERIMENTATION ARE DESCRIBED. THIS DOCUMENT IS ALSO AVAILABLE FROM UCLA STUDENTS' STORE, UNIVERSITY OF CALIFORNIA, 405 HILGARD AVENUE, LOS ANGELES, CALIFORNIA 90024, FOR $1.00. (HS)

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ISLANDS OF INNOVATION

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Islands of Innovation

By

B. LAMAR JOHNSON

A Report of an Exploratory Survey of the Utilization of Junior College Faculty Services

Occasional Report Number 6

JUNIOR COLLEGE LEADERSHIP PROGRAM
SCHOOL OF EDUCATION
UNIVERSITY OF CALIFORNIA, LOS ANGELES
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PREFACE

With the sharp expansion of junior colleges—both present and projected; with the rising costs of education—and a consequent necessity for efficiency; with the increased difficulty of procuring adequate numbers of qualified instructors; and with the continuing development of widely varied aids to teaching and learning, two-year colleges are seeking more efficient means for utilizing faculty services.

The particularly pressing requirements of the junior college are suggested by a recent report of the Educational Policies Commission of the National Education Association, which recommends two free years of public education beyond high school. The Commission proposes the development of nonselective two-year colleges in every population center. It further urges that these institutions "should expand their range beyond their immediate environs through radio, television, self-teaching devices, extension programs and correspondence courses." This recommendation is consistent with the spirit of those colleges that are seeking to increase the effectiveness with which they utilize faculty services—within the colleges and, in some cases, outside of their walls.

It is the purpose of this report to describe representative innovations and experiments in the utilization of faculty services in American junior colleges. Reference is also made to plans and proposals at two-year colleges. The practices and plans reported are largely based on visits to junior colleges, conferences with administrators and other junior college staff members—supplemented, in some cases, by the observation of teaching and also by the study of reports and publications.

The initial part of the survey here reported was made at the request of the Fund for the Advancement of Education and of the American Association of Junior Colleges. Financial assistance was provided by the Fund for the Advancement of Education.

During the spring and summer of 1963, the writer visited 21 junior colleges in 11 states and held conferences with administrators from 30 additional colleges in 5 of these states. He also corresponded with more than 40 junior colleges and conferred with a number of state junior college consultants and university professors of junior college education. During his travels he visited the offices of several agencies and organizations which are devoting major attention to the use of faculty services in education, including the Center for Programmed Instruction, the Educational Facilities Laboratories, the National Instructional Television Library, and Nelson Associates—all of New York City; and the Harvard University Committee on Programmed Instruction at Cambridge, Massachusetts.

The findings from the "travel survey" were submitted to the Fund for the Advancement of Education and the American Association of Junior Colleges in the summer of 1963—under the title *Islands of Innovation*. The findings of the initial survey are included in and comprise the major part of the present publication.

The initial survey has, however, been supplemented by additional visits to colleges, conferences with presidents, correspondence with administrators, and the study of reports and publications.

Ninety-five junior colleges (more than one in every eight of the 704 listed in the 1963 Junior College Directory) in fourteen states are represented by one or more practices in the report. Most colleges included in the survey were selected because they were reported to have, or were planning to initiate, innovating practices in the use of faculty services. A few colleges were, however, visited and a few administrators interviewed because of the convenience of their location.

For purposes of this report "practices in the utilization of faculty services" has been interpreted broadly. Included, for example, are considerations of the recruitment of faculty, year-round calendars, the use of community facilities in teaching, and work-study programs.

It is clear that not all of the innovating practices followed by the colleges surveyed were reported to the author. Likewise, not all of the developments that were identified are described in this document. It is believed, however, that the pages which follow explain typically representative innovating practices in selected two-year colleges. And the report aims to include those regarded as being most important.

Plans for the in-service education of staff and for the supervision of instruction, as such, are not discussed in this report. Since most of the practices reported are, however, planned as aids to improving instruction, this document will, it is hoped, be useful to junior colleges in making plans for the improvement of teaching.

The series, Occasional Reports from the UCLA Junior College Leadership Program, is devoted to the treatment of selected developments and problems in junior college administration. It is appropriate to include the present publication in this series, for it is clear that the effective utilization of faculty resources represents one of the most important needs—as well as opportunities—in junior college administration.

B.L.J.

Los Angeles, California

CHAPTER I

AN OVERVIEW

Junior colleges report widely varied plans for increasing the effectiveness with which they use faculty services. Although no single plan has been widely adopted, a number clearly offer significant promise for wide and successful use by junior colleges.

Most innovations identified in the present survey have been introduced for the purpose of improving teaching. A number have, however, been planned to make it possible to accommodate and effectively teach sharply increasing numbers of students; and others have been developed to achieve financial economy. In a few cases, innovations have been initiated as a means of achieving a combination of these ends: improve teaching, accommodate larger numbers of students, achieve economy.

Two-year colleges in large centers of population, including institutions which plan to develop multiple campuses, are among those which most often report college-wide programs for the effective utilization of faculty services. Notable developments are also, however, found in a number of colleges with relatively modest enrollments.

A. MAJOR FINDINGS

Major findings of the exploratory survey reported in these pages may be summarized as follows:

Recruitment of Faculty

1. The major source of supply for junior college instructors is—despite some disagreements among junior college administrators as to what is desirable—high school faculties.

2. Sizable numbers of potentially qualified high school teachers are available for and interested in junior college teaching.

3. There is some evidence (though the trend has not been clearly established) that the frequency of appointing high school teachers to junior college faculties is declining and that the appointment of students directly out of graduate school is increasing.

Provision of Time and Assistance for Faculty Members

1. A number of junior colleges provide teaching aides for instructors—particularly those who are teaching large classes.

2. A few colleges provide special secretarial assistance to relieve faculty members of routine clerical duties.

3. Some colleges provide special assistance—for example, by a director of instructional improvement or a director of institutional research—for instructors in developing plans for improving teaching and increasing the effectiveness of the use of faculty services.

4. Some colleges relieve faculty members of time from teaching or employ them during vacation periods to work on developmental planning.

5. A number of colleges use consultants as an aid to program improvement—including the development of plans for increasing the effectiveness of using faculty services.

6. A few colleges use the services of the same consultants over a long period of years.

Class Size

1. Several junior colleges provide special facilities as, for example, an electronic or push-button lecture hall, for use in teaching large classes.

2. A number of junior colleges have plants which feature rooms for use in teaching groups of varying size, ranging from two or three students to several hundred.

3. Some junior colleges, as a matter of policy, use a number of large classes and feature notably careful planning and preparation (including facilities) for teaching such groups.

Technological Aids to Teaching

1. A number of junior colleges feature the use of closed circuit television in their teaching.

2. Some junior colleges use open circuit television—both educational and commercial—in their teaching.

3. One junior college owns and operates its own educational television station. A second college is about to open such a station.

4. The use of television, particularly closed circuit, plays an important role in the planning of multicampus junior colleges.

5. A few junior colleges use telephones with attached amplification units and auxiliary microphones "to bring" to their classrooms experts from throughout the nation.

6. Junior colleges use a wide variety of other technological aids to learning—including, for example, radio, video tape recorders, elec-

tronic classrooms and/or language laboratories, opaque projectors, wireless microphones, electric pointers, automated projection equipment.

7. A number of junior colleges are developing instructional resource centers which include books and other printed materials coordinated with collections of varied audio-visual aids to learning. Featured in some are dissemination units which permit the transmission of information to various campus locations, and auto-learning laboratories where students may independently use varied media of learning (motion pictures, slides, disc and tape playbacks, for example) as they study.

Schedule and Organization of Instruction

1. Programmed learning materials are used in sizable numbers of courses in a significant number of colleges.

2. The use of programmed materials is increasing.

3. Programmed texts are used most frequently, and teaching machines are seldom used.

4. Although most junior colleges use programmed materials developed and published by other agencies, several colleges report the use of programs developed by their own faculty members. Some of these programs have been published by commercial publishing companies.

5. Team teaching is used somewhat casually and informally in large lecture sections in a sizable number of junior colleges.

6. Carefully planned team teaching, in which instructors with creative ingenuity pool their resources in teaching a course or perhaps in teaching the same students in several courses, is reported by a few colleges.

7. Plans of independent study are often discussed but seldom found in junior colleges.

8. Work-study programs are used in a number of junior colleges in all sections of the country.

9. Most colleges having work-study plans report that students work in their employment for part of a day and attend classes for part of a day. At one college, however, students work and study for alternating eight-week periods. Another uses alternating six-month periods.

10. A few colleges report the use of innovations in the class schedule as an aid to increasing efficiency of operation.

Using Community Facilities in Teaching

1. A number of junior colleges use, and others are planning to use,

community facilities in teaching in varied fields (particularly vocational), just as hospitals are used in programs of nursing.

2. Plans which involve the utilization of community facilities in teaching also ordinarily involve community personnel in the process of teaching.

Accelerating Student Progress

1. Year-round calendars are increasingly used by junior colleges.
2. A few junior colleges have systematic plans for granting credit by examination.
3. A sizable number of junior colleges accept selected high school seniors for enrollment in one or two classes.
4. Seldom do junior college students enroll in classes at neighboring senior institutions.
5. Occasionally senior institutions grant to junior college graduates credit in excess of that required for the completion of the sophomore year.

Cooperation Among Colleges

1. Neighboring junior colleges occasionally engage in cooperative curriculum planning as an aid to avoiding the needless duplication of costly programs.
2. In a few areas, neighboring junior colleges are planning to share and exchange faculty members.
3. Junior colleges in different sections of the country occasionally exchange instructors.
4. In a few situations junior colleges are participating with nearby senior institutions in plans for sharing staff and facilities.

Evaluation

1. Junior colleges seldom systematically evaluate their innovations in the use of faculty services.
2. A number of junior colleges study and plan to study the possible financial savings effected by the use of varied plans for utilizing faculty services.

B. ISLANDS OF INNOVATION

Despite the substantial and relatively comprehensive list of practices identified in this exploratory survey, it is clear that junior colleges, in general, are doing little experimentation in the effective utilization of faculty services. It must be recognized that most of the colleges included in the survey were selected because they had been known to engage in some innovating practices, but even among these institutions most of the practices reported are found in a scattering of colleges only.

The general picture revealed in the survey is one of significantly less experimentation than would be expected, or certainly hoped for, in an institution which is often referred to as "the most dynamic unit of American education."

But perhaps the reasons for little experimentation are not difficult to identify:

1. Up to the present two-year colleges, with notable exceptions in such shortage fields as physics and mathematics, have had relatively little difficulty in recruiting faculty members. The plurality of new junior college instructors comes from high school teaching positions, and there currently appears to be an almost inexhaustible supply of secondary school teachers with requisite academic qualifications who welcome the opportunity to teach in junior colleges.

2. Junior colleges are expanding so rapidly, and preparing for further expansion, that the time and energies of administrators and other staff members are often consumed with "keeping up" activities and duties. Little time and energy are available—or at least made available—for planning and experimentation in the use of faculty services.

Despite the general lack of experimentation in the utilization of faculty services, and regardless of its causes, there are some two-year colleges which because of institution-wide planning and programs may justifiably be designated "islands of innovation." Plans developed in a number of these are reported in the pages which follow.

Within a sizable number of junior colleges are found departments or individual staff members who are trying out new ideas, frequently at their own initiative and on their own responsibility. These may again properly be referred to as "islands of innovation" within their respective colleges. Practices developed under these circumstances are also described in succeeding sections of this report.

Reference should also be made to a few clusters of colleges which engage in cooperative curriculum planning and on occasion share the services of faculty members.

C. OPPORTUNITY AHEAD

The islands of innovation to which reference has been made give some indication of what may desirably be anticipated in junior colleges as, through necessity, they give increasing and concentrated attention to the effective utilization of faculty services.

It is hoped that this report may stimulate and aid two-year colleges in improving their use of faculty time and energy. Practices described in these pages may serve as a check list for individual colleges and for groups of neighboring institutions as they develop their own particular plans.

More than individual and informal cooperative efforts are, however, necessary. A variety of promising innovations have been identified in junior colleges in many sections of the nation. The opportunity to exchange experiences and share findings is needed, not only among neighboring colleges but also nationally.

Conferences and publications are required to report and discuss in greater detail plans that are but briefly outlined in the present report. Meetings of representatives of colleges working on similar developments (as, for example, programmed instruction, team teaching, independent study, teaching by television) could prove useful. Pooling of resources and exchanging views can be notably valuable, particularly when supplemented by consultation with experts who can aid in translating the findings of research into practices for junior college administration and teaching.

Junior colleges can desirably borrow suggestions and plans from other units of education. Particularly needed, however, are imaginative proposals which are directly relevant to the unique characteristics of the two-year college. These might include, for example, new ideas for using community personnel and facilities; innovations in organizing and providing remedial teaching of the type so widely required in the "open door college"; and proposals for completely new class schedules and college calendars adapted to the needs of the community college. Plans must be sought for economy of operation and for maintaining and improving the quality of instruction during a period of sharply expanding enrollments.

Among the practices identified in this report few are in the fields of technical-vocational education. (Most of these were related to work-study programs and to the use of community personnel and resources.) And yet this represents an area of notable national need. Costs are high—at times, prohibitively—and innovations are needed. Here is a field of particular opportunity for the junior college.

The times in which we live demand bold and imaginative thinking and planning at all levels and in all aspects of education. These demands, however, particularly confront the junior college—a sharply expanding institution which must clearly assume major responsibility for providing two years of college in the home communities (that is, within commuting distance, except in sparsely settled regions) of all high school graduates.

The suggestion of a "vice-president in charge of heresy," to which reference is later made, would appear to have promise for the junior college. Assembling at the national level a group of heretics, "young Turks," to share daring and often unworkable ideas and dreams might well point to needed directions and opportunities for junior college development.

In the course of his work on this exploratory survey, the writer has been impressed with the extent to which many agencies concerned with new frontiers in American education (recognizing as they do the central importance of the junior college to our nation) would welcome new, pioneering junior college developments. This survey has identified a variety of practices, many of which appear to offer significant promise. Some of these can and should be widely adopted by junior colleges. Additionally, however, entirely new ideas and plans must be developed.

Large opportunity lies ahead in charting as yet uncharted seas—in the bold and imaginative development of unique plans for a unique institution, the junior college.

CHAPTER II

RECRUITMENT OF FACULTY

As a background for discussing the utilization of faculty services in junior colleges, it is important to know something about the sources and supply of staff members. If instructors are in short supply, administrators may be impelled to make particular efforts to use effectively the services of those who are available. On the contrary, if staff members are readily available, there may be less motivation to develop and try out new plans.

A. SOURCES OF STAFF

A recent report from the National Education Association reveals that high school teachers (30 per cent of new full-time junior college teachers employed in 1961-62 and 1962-63) are the largest single source of supply for junior college faculty members (see Table I). Almost as many (27.6 per cent), however, come directly from college or university study. Smaller numbers come from college and university teaching (17.6 per cent) and from business occupations (11.1 per cent).

Data regarding the sources of California junior college instructors are available for the past five years. Although high school teaching is

TABLE I

SOURCES OF NEW FULL-TIME JUNIOR COLLEGE TEACHERS EMPLOYED IN 1961-62 AND 1962-63*

Sources	Number	Per cent
High school teaching	1,738	30.0
College and university study	1,601	27.6
College and university teaching	1,019	17.6
Business occupations	642	11.1
Other	794	13.7
Total	5,794	100.0

* Adapted from *Teacher Supply and Demand in Universities, Colleges, and Junior Colleges, 1961-62 and 1962-63*. Higher Education Series Research Report 1963-R3. National Education Association, Research Division, 1963.

the major source of new staff members in California, the percentage who come from secondary school faculties has declined during the past five years (see Table II). In 1957–58, 46 per cent of newly appointed California junior college instructors came from high school positions. By 1962–63, this had declined to 37 per cent. On the contrary, 27 per cent were new to teaching (most of these were engaged in graduate study immediately prior to their appointment) in 1962–63 as compared with 23 per cent five years earlier.

Although in the country as a whole the plurality of new junior college instructors come from high school teaching positions, there is some disagreement among junior college administrators regarding the desirability of appointing high school teachers to junior college faculties. On the one hand, it is suggested that the employment of such teachers in sizable numbers may tend to lower standards and also create an image of the college as a high school. It is further pointed out that employing high school teachers adds to the problems of secondary schools which are already having difficulty in securing staff. One administrator reports that a high school in his district was seriously handicapped when he appointed three of its key faculty members to positions in his junior college.

Table II

SOURCES OF NEW FULL-TIME JUNIOR COLLEGE TEACHERS EMPLOYED IN CALIFORNIA IN 1957–58 AND 1962–63*

Source	1957–58		1962–63	
	Number	Per cent	Number	Per cent
High school teaching	271	46	297	37
New to teaching	132	23	218	27
Junior college teaching	89	15	130	16
Senior college and university teaching	77	13	105	13
Other teaching (such as elementary, adult education, hospital)	20	3	59	7
Total	589	100	809	100

* Adapted from mimeographed reports from Oscar H. Edinger, Jr., Mt. San Antonio College, Walnut, California.

On the other hand, it is suggested that successful high school teachers, with strong backgrounds in their teaching fields, will add strength to two-year colleges. Several presidents report that their staffs have been strengthened and the public image of their colleges improved by appointing to their faculties outstanding high school teachers from their local communities. It is also pointed out that highly qualified secondary school teachers should have an opportunity to teach in junior college, if this be their desire. The comparatively few (in terms of their total numbers) high school teachers who join junior college faculties will, it is held, create no major problem for secondary schools.

Most junior college presidents report that they would settle for a staff with varied backgrounds—some from high schools, some directly from college and university study or teaching, and others from business and industry.

It is clear that high school teaching will continue to be a major source of supply for junior college faculties. This fact plus the availability of qualified high school teachers who wish to teach in junior college does much to minimize problems of staff recruitment. Nevertheless, there are a number of fields in which there is a notable shortage of qualified candidates.[1]

B. SHORTAGE FIELDS

Administrators in 442 junior colleges report for 1961–62 and 1962–63 a critical shortage of teachers in certain fields. Most often mentioned are mathematics, physics, chemistry, and English. Additional subjects, and the frequency of reporting them, in which there are often staff shortages are listed in Table III.

TABLE III

NUMBER OF JUNIOR COLLEGES REPORTING SHORTAGE OF QUALIFIED TEACHERS IN FIELDS OF GREATEST DEMAND IN 1961–62 AND 1962–63[*]

Field	Frequency
Mathematics	198
Physics	121
Chemistry	108
English	97
Engineering	73
Library science	52
Physical and health education	51
Electronics	37
Nursing	31

[*] Adapted from *Teacher Supply and Demand in Universities, Colleges, and Junior Colleges, 1961–62 and 1962–63*, p. 42.

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[1] This report is not concerned with problems associated with the appointment to junior college faculties of instructors who have no background of experience in or understanding of the junior college. The importance and reality of such problems is, however, revealed by Green's finding that in the judgment of deans of instruction and department chairmen the major problem of new junior college instructors was "understanding and accepting the philosophy and functions of the junior college." Charles Burton Green, *The Problems of the Beginning Junior College Instructor* (unpublished doctor of education dissertation, University of California, Los Angeles, 1960), p. 170.

It would appear that innovations and experiments in the effective utilization of faculty services, though needed in all areas, are particularly crucial in fields of critical shortage. Also, of course, the search for staff becomes notably important in such areas.

Few innovations in staff recruitment for shortage fields—or, indeed, for other fields—are reported. One president, however, explains that in seeking an instructor in mathematics he went to the campus of a university with an outstanding department of mathematics and interviewed students. "I stopped them in the halls," he explain, "to get their judgments regarding who was the best teacher of lower division mathematics at the institution. There was general agreement on one man. I investigated his qualifications, interviewed him, and invited him to a position on our faculty. He accepted and has proved to be a superior faculty member in every way."

A few junior colleges—and their number is increasing, particularly among new colleges—in a sense recruit staff in a shortage field as they purchase library books from jobbers who not only supply books but also prepare them for the shelves, including their complete cataloging and processing. St. Louis Junior College and five of the seven Los Angeles junior colleges follow this plan. They report a saving of both time and money—and consequently also staff.

In Montgomery County, Maryland, the American Association of University Women, with some cooperative participation by the League of Women Voters, is developing a card index of available teaching personnel among women of the county. The plan is to identify women who are available for either part-time or full-time teaching. The education, including field or fields of competence, and experience of each woman listed are recorded on an index card. Montgomery Junior College uses this index as an aid to securing faculty members—particularly in shortage fields and in areas (as, for example, unusual languages) in which part-time instructors are needed.

C. PART-TIME STAFF

Part-time faculty members are widely used in junior colleges. Five hundred fifty-six junior colleges with full-time staffs of 18,452 had 11,530 part-time teachers in 1962–63.[8]

Extensive use is made of community experts in evening programs. Much less—really comparatively little—use is made of such personnel in regular daytime classes, largely because those who are highly qualified are employed and busy during the hours when day classes meet. Some colleges meet this problem by scheduling classes for part-time teachers in early morning or late afternoon hours.

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[8] *Teacher Supply and Demand . . . 1961–62 and 1962–63*, p. 41.

At Los Angeles Pierce College, California, for example, an instructor of mathematics from a neighboring high school teaches a class at the junior college at eight o'clock in the morning and then returns to his high school.

Henry Ford Community College, Dearborn, Michigan, reports that some 300 classes—most of them in the late afternoon or evening—were taught by part-time instructors during the spring semester of 1963. Staff include "top" scientific, engineering, and management personnel from the Ford Motor Company and from General Motors.

Montgomery Junior College reports using as part-time instructors "dozens" of highly qualified scientists and other personnel from the District of Columbia and adjacent Maryland.

Engineers, scientists, and technicians from the nearby Naval Ordnance Test Station teach at the China Lake campus of Bakersfield College, California.

Fashion Institute of Technology, New York City, employs outstanding experts in various fields. A world-famous weaver, for example, teaches at the Institute for one and one-half days each week.

The Junior College of Kansas City, Missouri, uses highly qualified citizens as part-time instructors in both its day and evening classes. Architects and social workers have in particular been employed for daytime teaching.

Colleges in metropolitan areas which plan extensive and systematic use of highly qualified part-time personnel include recently (1960) established Miami-Dade Junior College, Florida, and two colleges which opened in 1963, Cuyahoga Community College, Cleveland, and St. Louis Junior College in Missouri.

Citizens often participate in teaching at junior colleges in their communities without pay. At the State University of New York Agricultural and Technical Institute at Farmingdale, dentists and dental surgeons serve as lecturers without charge in the dental hygienist program. They are listed as visiting lecturers in the college catalog. Somewhat similarly, at Los Angeles City College from 20 to 30 dentists—selected by the Los Angeles Dental Society—participate in teaching classes in the dental assistants' program.

Los Angeles junior colleges report the extensive utilization of citizens of the community (frequently members of lay advisory committees) as lecturers without cost.

In Muskegon, Michigan, a leading citizen and business executive, with a graduate degree in philosophy, teaches a course in philosophy at Muskegon County Community College three mornings a week. He donates his salary to the college library for the purchase of books.

The Junior College of Broward County, Florida, has made—and uses the findings of—a survey of business organizations in the community to identify personnel available for teaching, occasional lectures or conferences, or serving as part-time instructors.

CHAPTER III

PROVISION OF TIME AND ASSISTANCE FOR FACULTY MEMBERS

An important aid to the effective utilization of faculty services is to provide staff members time to perform those duties for which they are best qualified. This may involve, for example, special secretarial or clerical assistance; and help in teaching, laboratory work, and in the criticism or correction of student papers. It may also at times involve relieving faculty members of teaching or employing them during vacation periods so that they may work on curriculum and course development and on planning experiments and innovations in teaching—perhaps programmed learning, team teaching, independent study.

A. ASSISTANCE FOR INSTRUCTORS

A number of colleges use teaching aides in large classes. At San Antonio College, Texas, large sections (up to 120) in mathematics—calculus, for example—are taught by outstanding experienced instructors assisted by one or two beginning teachers who prepare materials of teaching, grade assignments and examinations, hold individual and small group conferences, keep records. This plan not only provides assistance for experienced instructors, but also supplies valuable in-service education for young staff members.

In classes taught in the Forum (seating capacity 300) at Orange Coast College, California, teaching assistants qualified in the fields in which they serve prepare materials of instruction, keep records, administer make-up examinations, and generally help the instructor in charge.

Amarillo College, Texas, and Miami-Dade Junior College, Florida, are among institutions in which assistants in science set up laboratories and demonstrations and assemble and prepare teaching materials.

In each science unit at the new St. Louis Junior College, laboratories and lecture rooms will be constructed around a central facilities room where demonstration materials, supplies and teaching equipment will be available. In charge of each service room will be a technician who can prepare laboratory and demonstration materials for faculty members. Such materials, when prepared, can be "wheeled into" laboratories and lecture rooms as they are needed.

At Delta College, University Center, Michigan, and at San Diego City College, California, assistants (college graduates with majors in English) are used extensively in grading and criticizing themes. A similar plan has been used in Los Angeles junior colleges and is projected for the new Cuyahoga Community College in Cleveland.

Executives in the Ford Motor Company and General Motors teach in the Management Training Program at Henry Ford Community College. In order that the time and energies of these men may be utilized to the best advantage, and also in order to attract them to teaching, several professionally trained staff members are employed to assist them in helping plan, prepare, and assemble teaching materials. Special help is given in securing audio-visual aids and secretarial assistance is generously supplied.

Several colleges are giving particular attention to providing adequate clerical and secretarial help for instructors—so that they may be relieved of unnecessary routine responsibilities. At Fashion Institute of Technology a survey of instructors' loads is being made to determine what tasks currently performed by faculty members can be assumed by secretaries. It is proposed to have such duties performed by secretaries, and then perhaps add to the instructional load of teachers and/or provide them with released time for curriculum development and improving instruction.

Assistance of quite different types is provided at Orange Coast College, Taft College and Compton College, all in California.

At Taft an instructor has been appointed to a half-time position as director of instructional improvement. The remainder of his time is spent in teaching. The director, who has no administrative responsibilities or authority, is assigned the following duties:

1. To explore the possibilities for improving instruction with the various divisions.
2. To identify specific instructional needs.
3. To locate sources of needed materials.
4. To give assistance to the staff in the utilization of materials.
5. To evaluate cooperatively the worth of instructional materials.
6. To suggest instructional items for the budget.
7. To assist in correlating audio-visual materials with courses of study.
8. To perform other duties as assigned.

At the close of the first year of this plan the faculty, on anonymous inquiry forms, was in virtually unanimous agreement that the position was valuable and should be continued. This judgment was based on a program which surveyed "needs of the faculty in instructional improvement" and then provided a variety of assistance: a workshop in programmed learning, with a university professor as speaker and consultant; a concerted and fruitful effort to secure National Defense Education Act Funds (to supplement those at the college) to provide electronic and other equipment for use in teaching physics, engineering drawing, foreign languages; an analysis of clerical duties performed by faculty members—with a resulting recommended plan for having such duties performed by a clerical staff; an audio-visual workshop with a guest speaker-consultant; weekly classified listings of current television programs which are relevant to various curriculum offerings; evaluative studies in several fields, including one on the effectiveness of programmed instruction in teaching remedial grammar.

Special assistance is available for instructors at Stephens College, Missouri, through both the Director of Educational Development and the nonresident Research Consultant who visits the college at periodic intervals; and at Orange Coast College through the administrative dean in charge of institutional research.

The Taft College plan and those followed at Stephens and Orange Coast—on small scales, to be sure—are mindful of Philip Coombs' suggestion that "it might be a good idea for every school system and every college and university to appoint a Vice-President in Charge of Heresy" whose duties would include, "at the very least, to keep informed about new developments and promising experimental results elsewhere and to encourage their application in his own situation."[1]

Quite different in nature and scope is the plan followed at Compton College where, in the 1963 summer session at the college, a university professor who is an authority on the teaching of English was appointed to teach remedial English. Not only did the professor assume his teaching responsibilities, but he also worked with and assisted faculty members in some of their current teaching problems and in planning for the future.

B. RELEASED TIME FOR FACULTY MEMBERS

One of the major obstacles to curriculum and instructional improvement—and this includes experiments in the effective utilization of staff resources—is the lack of faculty time for work on developing new plans and programs. Instructors are ordinarily so occupied with their day-to-day responsibilities of teaching that they have little time or inclination to devote to the time- and energy-consuming work which is essential in the planning and development of significant innovations.

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[1] Philip H. Coombs, *The Technical Frontiers of Education*, The Twenty-seventh Annual Sir John Adams Lecture at the University of California, Los Angeles . . . March 15, 1960 (School of Education, University of California, Los Angeles, 1960), pp. 14–15.

Fashion Institute of Technology from time to time releases faculty members from the teaching of one or more classes so that they may work on the construction of new courses or on the planning of varied types of instructional improvement. The budget of Los Angeles junior colleges provides funds for employing faculty members for varying periods of time to develop programmed learning materials in particular areas, such as mathematics and English.

The faculty committee on programmed teaching at the College of San Mateo, California, has recommended that time be provided faculty members (released time during the college year and/or time during the summer) in which to write programs. The committee further recommends that funds be sought from the National Defense Education Act, foundations, and manufacturers of teaching machines, for example, to supplement those which can be made available by the college for employing faculty members to work on programmed learning materials.

A development at Bronx Community College, New York City, illustrates the use of extracollege funds. At this college a publisher has advanced to an instructor more than $20,000 to pay costs of production and testing for a programmed course in physics.

Under its trimester plan, St. Louis Junior College every second year employs each instructor for a three-week period in which he engages in individual or group work and study, including work on curriculum and instructional planning and development.

At Orange Coast College, California, and at Stephens College, Missouri, faculty members, individually or in groups, may be employed to work on projects and plans. Developments on which faculty members at Stephens College (where one-third of the faculty was employed in this way during the summer of 1963) have worked during recent summers include programmed teaching of a course in logic, a plan for teaching beginning piano over television, and a team-teaching course in communication.

C. CONSULTANTS

Some junior colleges are recognizing that consultants with various types of expertise can be of notable value in developing plans for the effective utilization of faculty services.

An increasing number of states are providing assistance to junior colleges through staff members in state departments of education. Some of the developments in Florida junior colleges which are reported in the pages which follow have, for example, been advanced through the efforts of James L. Wattenbarger and his associates in the Division of Community Colleges of the State Department of Education.

Several groups of colleges use consultants in developing and carrying out plans for various types of cooperative work. Alfred M. Livingston, of San Diego State College, is consultant-coordinator for the "Men of Ideas" program being undertaken by the junior colleges of San Diego County in California (see Chapter IX). Frederick T. Giles, of the University of Washington, serves in a similar capacity for the study of the six-day week by a group of Washington Junior Colleges (see Chapter VI). Ralph T. Fields of Teachers College, Columbia University, is working with a group of eight two- and four-year colleges in the Mid-Hudson area of New York on the development of plans for intercampus cooperation (see Chapter IX). Eight Brooklyn institutions of higher education—one of them a junior college—are using the services of Nelson Associates of New York City as they project plans for working together (see Chapter IX).

Single institutions also, of course, use the services of consultants. Christian College (Missouri), Everett Junior College (Washington), and Orange Coast College (California) are among colleges which regularly have consultants at the precollege faculty conferences which precede the opening of classes. Foothill College (California) has visiting experts at its annual three-day mid-year faculty conference—in which members of the board of trustees also participate.

Representative of the use of consultants by newly established junior colleges is the work of Thomas O'Connell of Berkshire Community College at Massachusetts Bay Community, Norman Harris of the University of Michigan at St. Louis Junior College, William Mooney of El Camino College at Cuyahoga Community College and William Crawford of Washington State University at Columbia Basin College (Washington). At times the work of consultants is institution-wide in scope—as, for example, William O'Connell's work at Massachusetts Bay Community College or William Crawford's service at Columbia Basin College. On other occasions visiting experts direct their attention to specific areas or developments—such as Norman Harris' work on technical-vocational offerings at St. Louis and William Mooney's assistance with the program in chemistry at Cuyahoga Community College.

Long established colleges also use individual consultants upon occasion. Taft College has, for example, used James W. Popham, University of California, Los Angeles, to advise with the staff on programmed learning.

In most cases a consultant visits a college once or twice. Rarely does he serve over a long period of time. And yet, there are advantages to a college in having an authority return to campus at intervals over a several-year span of time. His visits act as "due dates" for staff reports on projects on which they may be working, and his long-time service encourages a continuity in program development. William Crawford of Washington State University has served as a consultant to a number of Washington junior colleges over a several-year period.

Under the Commission on Higher Education of the North Central Association of Colleges and Secondary Schools, a plan of continuing consultation has been developed for junior colleges which are accepted by the Commission as "candidates for accreditation." A consultant approved by the Commission visits a college at least twice each year during the period of its candidacy—and may, indeed, continue after the achievement of accreditation.

Perhaps the values of a long-term consultant are best demonstrated by Stephens College, where the late W. W. Charters served as part-time director of educational research over a period of more than 25 years. Charters typically visited the college for periods of a week five or six times each year. The genius and continuity of his leadership is reflected in many of the developments at Stephens, some of which are reported in this publication. Lewis B. Mayhew of Stanford University is currently nonresident research consultant at Stephens College, which he visits several times each year.

CHAPTER IV

CLASS SIZE

An obvious method of saving money—and possibly also of increasing the effectiveness with which faculty services are utilized—is to increase the size of classes.

Large classes are scheduled, sometimes as a matter of policy and at other times for reasons of expediency, in a sizable number of junior colleges. Some administrators express concern regarding any trend toward the use of large classes in junior colleges. In the words of one president, "I fear that the use of large classes will lead to the type of depersonalized teaching which is so often characteristic of the lecture sections commonly found in universities."

And yet, some colleges which use large classes as a matter of policy, while recognizing that they result in financial savings, report that the plans followed contribute to the improvement of instruction and, indeed, in some cases, to personalizing teaching. Such outcomes do not, however, just happen. They must actively be planned for and sought.

Junior colleges which use large classes as a matter of policy frequently provide special facilities to aid the effective teaching of sizable groups—and in some cases the teaching of groups of varying size, the size to be dependent upon their particular purposes as well as on the methods of study and teaching being used. Also reported are varied plans for administering and teaching large classes.

A. FACILITIES

Among the colleges which have given particular attention to providing facilities for large class instruction is Orange Coast College, which in 1960 completed the construction of the Forum, which one observer has characterized as "a lecture hall that performs with push-button efficiency." Seating 300, the Forum is equipped with varied electronic equipment—with dual controls at the speaker's lectern and a projection alcove—including tape recorder, turntable, wireless microphone, slide and filmstrip projector, sound motion picture projector, opaque projector, electric pointer, television camera, and screen. Lectures presented in the Forum are taped and are available for student listening for purposes of make-up and review in the college library. So effective and extensive has been the use of the Forum that a second lecture hall—Science Hall, seating 370—is under construction and will be ready for use during 1964. Science Hall is planned particularly for large-class instruction in science and will feature automated projection equipment for slides. A large screen (18 feet) and coordinated equipment will permit the simultaneous projection of three objects, with controls available to change each independently of the other two.

In the Learning Center at Stephens College, rooms of varying size are provided. Operable soundproof walls between some rooms permit combining two moderate-size rooms into a single large one. Conduits are installed throughout the Center, making it possible in the future to use aids to learning which have not yet been devised. Several auditoriums and classrooms, for example, have conduits for each row of seats. This will permit the eventual use, if desired, of student response monitors by means of which an instructor can secure on an illuminated seating chart immediate student response to questions.

The new Academic Center at Diablo Valley College, California, features rooms of varying size: lecture halls seating 300, 150, and 80; seminar rooms with capacities of from 12 to 15; and small group (3 to 6) conference rooms adjacent to classrooms.

Two recently established metropolitan junior colleges—Cuyahoga Community College, Cleveland, and St. Louis Junior College—similarly feature rooms with varied capacities in planning their new buildings.

Miami-Dade Junior College provides large shop-laboratories (up to 40′ × 80′) in technical fields. These laboratories have no fixed equipment; power is provided by overhead bus bars. Flint Community College, Michigan, has a recently constructed chemistry laboratory which can accommodate 112 students. Cuyahoga Community College is planning a typing room with a capacity of 100.

B. LARGE CLASSES

A number of junior colleges, as has been reported earlier, are using large classes, with carefully planned large-group instruction as a matter of policy. At Orange Coast College, for example, the faculty raised and studied possible answers to the question, How can we best provide for an expanded enrollment and yet provide quality instruction? One of the responses to this query was embodied in the decision to construct the Forum, which has been referred to above. Large classes with up to 300 students meet in the Forum. Instructors of large classes are given extra credit on their teaching load to permit meticulous care in the preparation of lecture-demonstrations, and are provided mature and competent teaching aides. These factors—reduced load plus qualified assistants—are essential to plans for providing high quality instruction which are an integral part of the "Forum plan." Classes typically meet in the Forum two hours a week and in small discussion groups for one hour. This represents a change from earlier practices when classes met in the Forum for one hour and in discussion section for two hours.

The faculty at Miami-Dade Junior College emphasizes the importance of the development of a strong core of required general education courses. This plan, in the judgment of the staff, is desirable from the viewpoint of educational philosophy and policy. Also, however, it is pointed out that this plan makes economy possible by permitting large sections of courses in which sizable numbers of students are enrolled.

At Miami-Dade sections of general education courses in science and social science with enrollments of 150 are taught. Instructors have teaching aides who assist in assembling and preparing demonstration and other teaching materials, grade examinations and assignments, take attendance, and keep records. In buildings which are now being planned, auditoriums with seating capacities of 250 will be provided.

At St. Petersburg Junior College classes enrolling 220 are taught with the assistance of closed circuit television in general biology, political science, earth science, and psychology. Classes meet in large groups two hours each week and in small discussion sections once. Instructors are assigned responsibilities consistent with their talents: those who are effective on television present lectures over closed circuit television; those who are effective as discussion leaders are placed in charge of small sections; and some have both types of responsibility. It is reported that under this plan, instruction is improved because time is available for the careful planning of instruction and also teachers engage in activities for which they are particularly qualified. Also, with the use of television there is better provision for and viewing of visual instructional materials.

At St. Petersburg, a plan is under consideration in which an instructor in English composition would teach a single section of 150 students with the extensive use of an opaque overhead projector on which the instructor would revise and correct student themes in full view of the entire class. Under this plan an instructor would meet 150 students three times a week. An instructor at St. Petersburg who has previously taught conventional size classes by the "overhead projector method" is convinced that the plan can be effective with 150 students, and can provide the instructor with increased time for correcting themes and for individual and small group conferences.

At Stephens College an instructor may be permitted to meet all of his students in a given course for a single hour during the week and then meet them in small groups for other hours. Under this plan an instructor, who is scheduled to teach five three-unit sections of a given course, may each week have a single meeting with all sections for one period; in addition, he would meet for two hours with each separate section. The instructor thus spends 11, rather than 15, hours a week in class. He therefore has four hours which he can devote to other uses.

At Santa Ana College, California, beginning chemistry classes meet in large sections (150 or more) twice a week and in smaller groups (35 or so) once. Closed circuit television is used to present taped, delayed-time demonstrations, and magnified live experiments.

Several colleges report plans for large-class instruction in remedial English. At Foothill College, California, large (175–200 students) sections are taught for two days a week, with smaller class meetings on other days. At Bakersfield College large (in this case 100) sections of remedial English meet three times a week. No significant difference in achievement is noted in these classes and in those of conventional size taught by the same instructors.

At Yuba College, California, large sections (100–125) of remedial English are taught under a plan in which programmed texts are used.

Large classes (up to 80) in English composition and history are taught at York Junior College, Pennsylvania. Each instructor has teaching aides with baccalaureate degrees. This plan is reported to result in both financial economy and in improved instruction.

Some colleges have large laboratory sections. At Boston's Wentworth Institute, where each laboratory-shop accommodates 40, each section is taught by two cooperating instructors. The resulting 20 students to 1 instructor ratio represents an increase from a former ratio of 12 to 1.

At Miami-Dade Junior College up to 52 students are enrolled in sections in drafting. Earlier reference has been made to the large technical occupational laboratories which are to be provided in new buildings at Miami-Dade.

Referred to earlier was Flint Community College which has a chemistry laboratory that can accommodate 112 at one time.

CHAPTER V

TECHNOLOGICAL AIDS TO TEACHING

In an age of technology, education has an opportunity to use aids to teaching and learning that were unknown and even undreamed of a generation ago. Television—open and closed circuit—and electronic facilities for listening and viewing are representative technological developments which give every reason for re-examining and, in many cases, revising the organization and processes of teaching.

Review of present practices and the projection of plans for using the resources of technology are centrally important to the effective use of faculty services. Some junior colleges are advancing along these lines. In particular, there have been a number of promising developments in the use of television in teaching.

A. TELEVISION

Chicago City Junior College, in a program initiated with the help of funds from the Ford Foundation, is giving nationally recognized leadership in the use of television for teaching. Most courses on television are taught for two 45-minute periods each week, rather than for the three 50-minute periods used on campus. Students register at one of the seven branches of the college and take examinations on campus as required. Assignments prepared by students are corrected by staff members, who, in certain courses, are aided by assistants. Instructors have regularly scheduled "telephone office hours" when they consult with "television students." Library facilities are available to such students.

Each week the college purchases up to 25 hours from Chicago's educational television station (Channel 11). During its six years of teaching by television, Chicago City College has registered some 70,000 different students in more than 100,000 course registrations. Twenty-seven thousand of these have registered for credit in more than 42,000 different registrations. In addition, teaching by television has the value of providing programs that are seen by thousands of nonregistered citizens of the community. Students who register, but not for credit, pay a $1.00 enrollment fee, following which they receive the study guide for the course they wish to view. Audio recordings of telecast lessons are available in the library of a centrally located branch for students who have missed, or who may wish to review, telecasts.

More than 50 different courses have been offered over television by Chicago City Junior College, and enrollment has grown from a full-time equivalent (15 credit hours per student) of 555 in the fall of 1956 to an average of 900 during 1962–63.

> One reason for the richness and variety of the course offerings is the wholehearted acceptance of the project by the Chicago City Junior College faculty. Last year, for example, eighty-seven regularly assigned college teachers applied to teach on TV. TV College has never had difficulty obtaining highly qualified and gifted studio teachers.[1]

Eighty per cent of those who register complete their courses, and sixty-five have graduated with the Associate in Arts degree after taking all of their junior college work over television.

A news item in the *National Educational Television News* points out that Chicago has "the only college-level instructional program in which all lectures are televised, which grants degrees (Associate in Arts) recognized by accrediting bodies throughout the nation. . . . It is renowned not only for its size and long history of success but for its interesting extension of the opportunity for college education to many persons. One well-remembered alumna of the cathode campus enrolled as the mother of eight children and was graduated as the mother of ten. Highest marks in the class of 101 students graduated last year were captured by an inmate of Statesville Penitentiary. Special ceremonies were conducted at the prison for him and seven fellow graduates there."[2]

Home viewers taking courses in Chicago make higher scores on objective tests than do on-campus students. It should be noted, however, that home viewers are older and, in all likelihood, more highly motivated than teen-age college students.

In addition to the values of teaching by television, which come to those who view such courses, the staff at Chicago City College points to other advantages of the plan. Every course taught over television (and there have been more than 50) has been subjected to close analysis—certainly a step in the direction of instructional improvement. As evidence of such improvement it is pointed out that the achievement of students in many regular college classes, as measured by objective tests, has been raised. It is also reported that teaching by television has led to the improvement of instruction in courses not

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[1] Clifford G. Erickson, "Chicago's TV College," *Junior College Journal*, XXIII, No. 9 (May, 1963), 23.

[2] "How Big a Role on the Campus for ETC?" *NET News*, VIII, No. 1 (Winter, 1963), 2.

"on the air" by the stimulation that comes to instructors throughout the college. The teaching guides prepared for television courses are in wide demand by faculty members.

San Bernardino Valley College has the only college-owned educational television station in California and, so far as is known, the only junior college educational television station in the country. Assembled by students in the telecommunications program of the college, the station began operation in the fall of 1962 with ten to twelve hours on the air weekly. Since the college is a member of the National Educational Television Network, offerings of this network, as well as college-produced programs, are telecast.

During its first year of operation the San Bernardino station offered courses in general biology (produced at the college and taught by a college instructor), income tax accounting (also college-produced and taught), and economics (purchased from the National Educational Television Network—available to the college for telecasting at a prime time rather than in the early morning—and supplemented by a weekly lecture by the college instructor who supervises the course). In addition, the station presented a wide variety of taped cultural and educational programs such as interviews with Carl Jung and Dame Edith Sitwell, lectures and dance performances by Martha Graham and her group, lectures in family relationships, and presentations of twelve full-length plays, including *Antigone* and *Hamlet*.

Television offerings during 1963–64 include courses in political science, humanities, music appreciation, and remedial English, as well as biology.

Phoenix College offers selected courses (American history, Arizona history, biology, psychology, intermediate algebra) over television on time donated by a commercial television station. College officials note that thousands of viewers who are not taking courses see the programs.

Amarillo College, Texas, has for two and one-half years been offering courses in such fields as government, history, and business English over commercial television.

San Antonio College in 1963 offered—over the area educational television station KRLN—a course in American history previously prepared and taped by an instructor at the college under a grant from the Ford Foundation. This course and another in music appreciation prepared at San Antonio College, also with the assistance of a grant from the Ford Foundation, are available for use by nine other colleges and universities (including the University of Texas) which are members of a cooperative closed circuit (microwave) television network. San Antonio College has used five courses (psychology, German, chemistry, music appreciation, and American history) over this network.

Miami-Dade Junior College teaches four courses in business education (shorthand, typewriting, business correspondence, and business arithmetic) over open circuit television. Miami-Dade also offers over television a course in college mathematics which was developed by instructors from several Florida junior colleges.

Daytona Beach Junior College, Florida, offers a course in Florida history (previously taught over radio by the college) over a commercial television station. Plans are in process for similarly teaching a course in state and local government.

American River College, California, offers a course in remedial English over the educational television station in Sacramento.

The Florida Television Commission makes video tape recordings of 24 courses (in such varied fields as humanities, science, social studies, mathematics) available to junior colleges for telecast on any of the state's five educational television stations. Junior college staff members participated in developing several of these courses.

A number of colleges use in their instructional programs telecast courses for which they have no direct responsibility. Bakersfield College, for example, uses "The American Economy" which appears over a national network. Students who take this course also have a two-hour weekly discussion session with an instructor in economics.

Gulf Coast College, Florida, receives and uses, as enrichment materials in beginning French and Spanish and in earth science, telecasts from the educational television station at Florida State University. Classes at Gulf Coast meet at the hours of the telecasts, two of which they view each week. Instructors at Gulf Coast plan their use of telecasts in consultation with the professors at Florida State University who teach the courses. Since three-fourths of the graduates of Gulf Coast transfer to Florida State, the coordination of instruction in certain transfer courses offered at the two institutions proves to be helpful.

Stephens College, Delta College, and St. Petersburg Junior College make extensive use of closed circuit television in their teaching.

At Stephens College "Ideas and Living Today," a two-semester course required of all entering students, is concurrently taught in 50 sections of approximately 20 each over closed circuit television. About half of each class period is devoted to a telecast (for example, lecture, panel, interview, dramatization, pictorial presentation) over closed circuit television. This is immediately followed by discussions under the leadership of faculty members. The content and organization of the course is planned by a teaching team of five members, and instruction over television is, for the most part, provided by team teachers. They also meet several times each year with the 50 "discussion teachers."

In the communications course at Stephens ten closed circuit television lectures are presented on topics which are required in all sections. Under this plan one instructor, selected for his special qualifications, prepares and presents a lecture once, rather than having ten instructors prepare lectures and present them a total of 40 times. In this way the time of instructors is saved and made available for other purposes, including conferences with students and the correction of themes.

Closed circuit television at Stephens is also used in teaching beginning piano, in projecting motion pictures to several sections of child study which meet concurrently, and in holding an all-college "televised convocation" which all students attend over television in their respective residence halls.

At Delta College every classroom is equipped with facilities for receiving closed circuit telecasts over the college's four channels. Television is particularly used in teaching the several general education courses required at the college. One lecture in English composition is, for example, telecast each week. Under this plan all students in the course have the opportunity to be taught by an instructor who is recognized as an outstanding lecturer. Similarly, members of the teaching teams responsible for the course in humanities regularly use television for presentations to all sections of that course.

A calendar of television and film presentations at Delta is duplicated and distributed each week so that students may "tune in on" telecasts of their choice.

Earlier reference has been made to the use of closed circuit television in teaching large classes in biology, earth science, political science and psychology at St. Petersburg Junior College.

Closed circuit television is used in supervising the hospital work of student nurses at Bronx Community College, New York. Fixed television cameras in eight hospital rooms are connected with two monitors at which the supervising instructor is seated. One monitor changes automatically every twelve seconds, so that every student is seen frequently; and one is manually operated, so that the instructor can change or "hold" as long as may be desired. Each student nurse has a transistor hearing aid, with an earphone, by means of which she can receive comments or instructions from the supervisor. The student can also talk to the instructor by means of a microphone in the wall of each room.

A considerable number of colleges used closed circuit television for occasional teaching. At Cerritos College, California, for example, a camera and two monitors are used in physics classes to telecast images of radioactive materials and also to present demonstrations which can be seen by an entire class only by using such magnification as is possible with television.

The interest which junior colleges have in television is suggested not only by the extent of its current use in teaching but also by plans, in various stages of advancement, for the future.

Although only one junior college (San Bernardino Valley College) has been found in this exploratory survey to have its own educational television station, the College of San Mateo is to open such a station in the spring of 1964. The San Mateo station is scheduled to feature the offering of regular college courses, the development of "service offerings" (as, for example, "speed reading"), and the telecasting of significant community events.

At least one other college (Bakersfield College) is actively investigating the possibility of constructing such a station. Orange Coast College, in cooperation with the Orange County Superintendent of Schools' office and with the high schools of its district, is also considering the development of a television station.

Montgomery Junior College is participating in study and planning for a state-wide educational television network in Maryland. Similarly, Cuyahoga Community College is working on plans for a county-wide network in the greater Cleveland area.

Buildings under construction and planned by many junior colleges suggest the likelihood of more extensive future use of television in teaching. Representative of these plans are policies under which conduits for the use of closed circuit television are to be provided in all rooms of new buildings at New York City Community College, at Farmingdale, and in Los Angeles junior colleges.

The current development of multicampus junior colleges is reflected in the plans of a number of such colleges (present or projected) to make intercampus use of closed circuit television. In addition to present multicampus two-year colleges such as Chicago, Contra Costa (California), Los Angeles, and San Diego, others are at varying stages of planning and development. These include Maricopa County (Phoenix) in Arizona; Foothill, Orange Coast, San Bernardino Valley, and College of San Mateo in California; Miami and St. Petersburg in Florida; Montgomery Junior College; St. Louis Junior College; and Cuyahoga Community College. Most of these institutions plan to use closed circuit television so that instructors on one campus can be "available" for teaching on other campuses.

Rather than establishing a second major campus, San Bernardino

Valley College is considering developing a group (perhaps five or six) of small satellite campuses located in neighborhoods where sizable numbers of students live. Facilities at each satellite location would include classrooms and offices. Laboratories, libraries (except for very modest-sized book collections), and facilities for physical education would be on the main campus. Closed or open circuit television connecting the main campus and satellite campuses is an important part of the planning under way at San Bernardino.

B. OTHER TECHNOLOGICAL AIDS

Technological aids to teaching in junior college are by no means, of course, limited to television. Earlier reference has, for example, been made to the proposed use of the opaque projector in teaching an English composition class at St. Petersburg; and to the Forum, the "push-button" lecture hall, at Orange Coast College.

Video tape recorders are used, not for television but for other instructional purposes at some colleges. At St. Petersburg Junior College students in speech classes have their speeches recorded on video tape and then played back to them so that they can see themselves "in action" as they and their classmates discuss their appearance, manner, and general presentation. At St. Petersburg and at Bronx Community College plans are well advanced for taking video tapes of students in nursing as they work in a hospital—with, again, provision for "play-back" so that students may see themselves in action.

A video tape recorder is available for classroom use by instructors at Foothill College who wish to record class periods and then play them back as an aid to improving their teaching.

More frequently used than video tape recordings are audio tapes. At Montgomery Junior College selected lectures in chemistry (especially those on topics in which students have difficulty) are recorded on tape and are available for loan to students to use in review.

At Fresno City College, California, an instructor in history records lecture discussions on how to study selected chapters in the history textbook. These are played to students at scheduled hours in a library listening room. Emphasis is given to this plan early in a course to aid students in developing habits of study.

Tape recordings for use in spelling, vocabulary, and grammar have been made by an English instructor at Mt. San Antonio College. Students use the tapes in facilities made available in the library. Similarly, tapes for dictation are used in the library by students in shorthand.

Foothill College library has a 12-channel, 200-station listening laboratory for use in varied fields—including literature, music appreciation, shorthand, and foreign languages.

These facilities—at Montgomery, Fresno, Mt. San Antonio, and Foothill—are in addition to language laboratories with recording and listening facilities. Such laboratories, or "electronic classrooms" as they are designated at one college, are widely used in the teaching of foreign languages in junior colleges. This is particularly true in California and a few other states where junior colleges can qualify for assistance from National Defense Education Act funds.

Audio library materials of a somewhat different type are used by students of nursing at Bronx Community College where tape recordings are made of sounds (for example, fetal heart beats and pulse irregularities) with which students should be acquainted. These recordings are available for use in the college library. Somewhat similarly, in the dental hygienist program at St. Petersburg, pictures of unusual conditions in mouths are assembled on slides and tapes. Again, students use these in the college library.

In the Science Library at Stephens College microscopes and files of slides are provided and organized in such a way that students may go to the library and use slides, much as they would read books or periodicals. These facilities are largely used by students in life science.

A different type of learning with the aid of slides is reported at Los Angeles Valley College. Here, as the first step in registration, slides synchronized with recorded comments are used with large groups of students in explaining the college and its program and in presenting step-by-step directions for enrolling in classes. Initially used only in the evening program, the "automated slide" plan was found to be so effective—in providing students with an understanding of the college and its program as well as in saving time at registration—that it is now used with all first-time registrants at the college.

Although it is quite possible that a number of colleges are using radio in teaching, only Daytona Beach Junior College reported such use during the present exploratory survey. Daytona Beach has for several years offered college credit courses on radio, including foreign languages, Florida history, state and local government. Staff members at the college suggest that the potential of radio for education is being neglected and should be exploited.

St. Petersburg Junior College, in its business education department, uses a "control reader" in the teaching of such skill courses as shorthand, typing, and business mathematics. With the use of the reader, materials to be typed or recorded in shorthand or problems to be solved are projected on a classroom screen for typing, recording, or solution by students. Gradually the speed and/or complexity of the materials are increased as an aid to increasing student proficiency.

Under consideration at St. Petersburg is the possibility of buying a "grading machine" which can be used by a secretary for grading objective tests used in the large sections of general education courses. The purchase of this facility would relieve instructors of time-consuming responsibility which can effectively be assumed by a secretary with the assistance of a "grading machine."

At Stephens College telephones with attached amplification units and auxiliary microphones are set up in classrooms. Using such apparatus, classes can visit with a governor or a labor union official, an author, editor, business executive, or a scholar in any one of a variety of fields. This plan—particularly used in political science but also in literature, business education, and philosophy—aims to bring to the college classroom, by way of the telephone, leaders of American thought and action.

The microphone feeds students' questions into the long-distance telephone connection, and the amplifier and loudspeaker take "guests" voices from the telephone live and "broadcast" them to the classroom. Representative "telephone guests" at Stephens include Norman Cousins, editor of the *Saturday Review*; Edmund G. Brown, governor of California; Jean Stafford, poet and novelist; Dexter Keezer, vice-president and director of the economics department of McGraw-Hill Book Company; Jaroslav Pelikan, at that time professor of historical theology, University of Chicago; Budd Schulberg, author-playwright-scenarist; and John Malcolm Brinnin, author and critic. After Premier Khrushchev's visit to the Roswell Garst farm in Iowa, students interviewed the American farmer-host for 41 minutes at a cost of $10.35 for long-distance charges.

Delta College similarly uses the telephone in teaching various courses. At Delta telephone interviews are recorded and made available for use and circulation through the library. Plans for introducing the telephone to the classroom are well advanced at Miami-Dade Junior College.

El Camino College, California, is in a more limited way using classroom telephones in teaching journalism. Telephone calls are made to local citizens who are interviewed by students, as classmates and the instructor listen.

With the assistance of a grant from the Fund for the Advancement of Education, Stephens College has recently expanded its use of the telephone in teaching to a "network plan." During the fall of 1963 a 13-week noncredit course on the teaching of science—featuring four Nobel Laureates—was offered via telephone at six four-year colleges (in addition to Stephens) in Georgia, Kansas, Missouri, Ohio, Oklahoma and Tennessee. The sessions, which were conducted by the chairman of the Science Division at Stephens, were also available to the faculties of 38 additional colleges who were invited to the campuses of the participating institutions for the "telephone lectures."

Offered by network telephone in the spring of 1964 are (this time to ten colleges plus Stephens, including additional campuses in Louisiana and Mississippi) two three-unit courses: Great Issues of Contemporary Society, under the direction of an instructor at Stephens; and American Life as Seen by Contemporary Writers, led by a professor at Southern Illinois University. Invited "telephone professors" for the courses include James Baldwin, Ralph Bunche, John Ciardi, Max Lerner, Margaret Mead, David Riesman, and Robert Oppenheimer.

C. INSTRUCTIONAL RESOURCE CENTERS

A sizable number of junior colleges, along with many high schools, some senior colleges, and a few universities, are expanding their libraries to include varied audio-visual aids to learning. The convenience of "one-stop" instructional materials service is obvious.

A few colleges are, however, going beyond the concept of centralizing materials. These colleges conceive an instructional center as an area literally saturated with all available appropriate tools for learning, and designed and administered to facilitate the use of these tools. In such a center materials for teaching may be "custom designed" to meet the particular requirements of different instructors. From this center, via coaxial cable, all manner of information and presentations may be transmitted to campus classrooms, lecture halls, and listening-viewing centers.

To the realization of outcomes such as these, Stephens College is giving national leadership—not only among junior colleges but also to higher education in general—through the planning and development of its new learning center.

Stephens College has long pioneered in the provision and use of varied library materials in teaching. More than a quarter of a century ago, with the assistance of a grant from the Carnegie Corporation of New York, the college developed a library-instructional program, one feature of which was an "expanded concept of library materials."

> The concept of library materials is expanded to include not only books,

> periodicals and other printed materials but also pictures, music scores, phonograph records and motion pictures.[3]
>
> With the continuing development of new and improved methods of reproduction (pictures, phonograph records, microfilm and the radio) the range of materials with which the college library can serve the student is being expanded rapidly.[4]

Similarly, more than 25 years ago, Stephens College recognized the need for a new type of "library-instructional building." Plans at that time—before the age of television and electronics—developed for the college by a committee of distinguished educators and librarians are quite different from those which are possible today. Nevertheless, even then the college staff was thinking about an entirely new type of building for teaching and learning.[5]

Specific plans for the present Stephens College Learning Center were initiated with an educational conference in the fall of 1959. Sponsored jointly by Stephens College and the Educational Facilities Laboratories, the conference considered the educational needs of American society, the learning process, procedures of and organization for teaching, the availability of a host of new educational media, and the implications of all of these for the planning of educational facilities. The Stephens College faculty studied the proceedings of the conference as a basis for planning the Learning Center which was completed during the 1963–64 school year.

Features of the Center include:

1. A library which integrates books and periodicals with film, sound, and graphic collections through a common catalog so that students and faculty can have ready access to varied materials of learning.
2. A dissemination unit with facilities to transmit information, through varied media, throughout the Learning Center as well as to additional campus locations. Coaxial cables permit simultaneous transmission over seven video channels and 50 frequency modulation audio channels, plus numerous additional telephone circuits as needed.
3. "Auto learning" laboratories where students may independently use varied media of learning as they study. Available for use are motion picture, slide, and viewing rooms; listening rooms with disc and tape playbacks; and listening-viewing rooms for the reception of stereophonic sound and visual materials transmitted by coaxial cable from the storage-dissemination area.

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[3] B. Lamar Johnson, *Vitalizing a College Library* (American Library Association, 1939), p. 116.

[4] *Op. cit.*, pp. 90–91.

[5] *Op. cit.*, pp. 118–122.

4. A network of ducts throughout the Center to permit the expansion of facilities, as required, and also to permit the future installation of new type equipment and facilities which have not yet been devised.

5. A series of varied size conference and classrooms. In addition to available lecture halls (including one with a capacity of 600), new instructional areas seat from 2 to 3, 6 to 10, 20 to 30, 60, 120, 135, and 300.

6. A laboratory in which instructors may have "made to order" audio-visual materials, including charts and pictorials, for use in their teaching.

7. Conference rooms adjacent to the library stacks where books in the field of literature are housed. In these rooms literature is taught by the use of a small group-individual conference method, with appropriate materials of instruction, books, immediately at hand.

The participation of the faculty has obviously been of central importance in the planning and development of the Learning Center. Particularly notable have been such earlier developments at Stephens as the following, the implications of which have been "built into" the Learning Center: the use of listening tables for theater arts, speech, shorthand, social studies, and humanities; amplified telephone instruction in social studies, business education, philosophy, and literature; foreign language instruction which emphasizes an aural-oral approach combined with a reading and writing approach—in all of which the language laboratory has been important; the extensive use of closed circuit television in teaching; team teaching experiments with a wide variety of media and methods of instruction; and a conference method of teaching literature in rooms immediately adjacent to the literature stacks in the library.

At Miami-Dade Junior College plans are well advanced for a learning center which is to embody many features of the Stephens College Center—adapted, however, to the requirements of a large public junior college located in a metropolitan area.

In the fall of 1963 Mt. San Antonio College, California, inaugurated the use of its new library which includes books and other printed materials, audio-visual aids, and facilities for television. Plans for a learning center are in process at St. Louis Junior College. At Mt. San Antonio the college librarian is Dean of Library and Audio-visual, and at St. Louis he is designated Director of Instructional Resources.

In planning its Learning Resources Center, Contra Costa College, California, is giving particular attention to the qualifications of a learning resources specialist who is to be added to the staff. He must be more than a technician. He must have had experience in teaching and be well grounded in the psychology of learning. He must, further, be creative and open-minded—not afraid to depart from traditional methods of instruction. Instructors will be encouraged to bring to the Center problems of teaching which they are unable to solve by usual methods. The facilities of the Center—in particular, the services of the learning resources specialist—will be available for assistance.

CHAPTER VI

SCHEDULE AND ORGANIZATION OF INSTRUCTION

Various plans of organization—staff, materials of teaching, scheduling and coordinating the work and study of students—can be used to contribute to the effective utilization of faculty services. Among such plans operative in junior colleges are programmed learning, team teaching, independent study, work-study, and modifications of class schedules.

A. PROGRAMMED LEARNING

There is an undeniable ferment of programmed learning in junior colleges as, indeed, there is today in much of American education. Although few two-year colleges have institution-wide emphasis on programmed instruction, a considerable number make some use of this plan for teaching. Most junior colleges use programs prepared and published elsewhere. At some colleges, however, staff members develop materials for their own use.

Delta College has a library of more than 200 different programs in a multiplicity of fields. Also available are a variety of teaching machines. Housed in a special room in the library, all programs are available on a rental basis—in particular, for use by adults for non-credit instruction. In some cases credit by examination may be arranged following the successful completion of a program. More than 800 enrollees have completed fully programmed courses at Delta.

In addition, extensive use of programmed materials is made in remedial courses at Delta College. Remedial courses in English and science (physics and chemistry) are partially programmed and those in mathematics are completely programmed.

The coordinator of improvement at Delta College publishes and keeps up to date, with supplements, a bibliography of programs and a list of teaching machines.[1]

A number of colleges in addition to Delta use programmed materials in remedial instruction. Los Angeles Valley College has a study skills center where programs in remedial English and mathematics are available. Students are referred to the center, which is under the supervision of a faculty member, by their instructors. Materials may be used at the center or borrowed for home study. The study skills center at Valley College is being observed by officials of the Los Angeles Junior College District as a likely prototype of a unit planned for inclusion, on a larger scale, in the learning resource center of a new junior college soon to be established in West Los Angeles.

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[1] Carl H. Hendershot, *Programmed Learning: A Bibliography of Programs and Presentation Devices* (University Center, Mich.: Delta College, 1963).

The mathematics department at St. Petersburg Junior College has a laboratory for use by students with deficiencies in mathematics. The laboratory, which is under the supervision of an instructor, is "stocked with" printed programs in mathematics. Students are instructed to use materials in their areas of need.

The Communications Clinic (the major function of which is to offer remedial instruction in English) at North Florida Junior College houses a sizable collection of programmed instructional materials, particularly in remedial English and mathematics. These are used for remedial instruction and also by students who have make-up work.

Programmed materials utilizing teaching machines are used in a review course, Mathematics 10, at Montgomery Junior College, Maryland. A similar plan, but with the use of programmed texts in class groups of 60, is followed in the mathematics review course at San Diego City College. San Diego City College is further developing long-range plans for teaching remedial work in English and mathematics in large sections using self-tutoring programmed materials.

Yuba College is experimenting with the use of programmed texts in large (100 to 125 students) sections of remedial English. At El Camino College programmed materials are used as supplementary resources in teaching remedial English.

A Stephens College instructor has developed programs of instruction in remedial English. These programs are housed in the Communications Library where students may use them. Tests over the materials studied are given at scheduled hours once a week.

An instructor at Bronx Community College is programming—as a dissertation at Teachers College—a course in remedial mathematics particularly planned for students in nursing.

At St. Petersburg Junior College applicants for admission to the two-year program in nursing whose qualifications are satisfactory except for a deficiency in mathematics are required during the summer to take and satisfactorily complete a remedial, noncredit course in basic arithmetic (with emphasis on ratio and proportion). This course was first offered in the summer of 1963 and is taught on an individual basis through the use of programmed learning materials and teaching machines. Also at St. Petersburg students in Spanish with low achievement are assigned to work with TEMAC (Encyclopedia Britannica Films) materials—printed programs accompanied by recordings. As the student studies printed materials he hears the correct pronunciation of the words he is reading. The complete TEMAC program in Spanish requires a total of 45 hours.

Bronx Community College along with Dutchess Community College, Poughkeepsie, New York, has used experimentally a programmed unit on asepsis in their courses in fundamentals of nursing. This programmed unit was prepared as a doctoral study at Teachers College, Columbia University.[8] Currently in preparation, also at Teachers College, is a program for an entire course in fundamentals of teaching.

At Orange Coast College a group of teaching machines, together with programs, are housed in the college library where students come for make-up, remedial, or enrichment assignments—using the machines (located in carrells) and programs much as they would other library materials. Programs are currently available in business data processing, electronics, slide rule, life science, physical science, remedial English, and remedial mathematics.

A similar plan is followed at Cerritos College where teaching machines and programs are available for library use in computer mathematics, algebra, spelling, slide rule, trigonometry, and electronics.

Christian College, Missouri, uses teaching machines—designed by an instructor and constructed at the college—and programmed materials for the enrichment of instruction in Spanish, music theory, accounting, home nursing, and geography.

At Bronx Community College programmed texts are used in teaching selected units in electrical technology. Bakersfield College reports the use of teaching machines in teaching electronics. At Hill Junior College, Hillsboro, Texas, instructors used programmed learning materials for enrichment purposes two hours each week in beginning Spanish. At Fresno City College programmed materials developed at Fresno State College are used in teaching psychology. Instructors at El Camino College coordinate programmed instruction in psychology with lecture and discussion sessions. At Los Angeles City College a program has recently been used in teaching trigonometry.

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[8] Marie M. Seedor, *Introduction to Asepsis: A Programmed Unit in Fundamentals of Nursing* (New York: Bureau of Publications, Teachers College, Columbia University, 1963).

A programmed learning text is used in teaching business mathematics at San Bernardino Valley College. The college has purchased 40 copies of the text which are placed in a classroom to which students are scheduled to come to work at their own rate. Some students complete the course in 50 hours; others require well over 100.

A number of colleges build their own programs. Reference has been made to a communications instructor at Stephens College who prepares and uses programmed materials in remedial English. Also at Stephens selected units in a course in deductive logic have been programmed and are used in classes at the college. At the same college an instructor uses programmed materials, adapted from materials developed at Michigan State University, in teaching certain units in Foundations of Natural Science.

At Chicago City Junior College instructors are encouraged and helped to develop programmed materials of instruction for use in their classes. Instructors are asked to identify units of their courses which they consistently have difficulty in teaching each time they offer a course. They are then invited to consult with the dean who is responsible for coordinating programmed instruction to get his help, and that of his staff, in developing programs for teaching the "difficult units."

At Chicago programmed materials are being used in a number of courses taught on television, especially to help students master topics with which they report difficulty. In the telecourse study guide for Humanities 202, for example, a programmed guide to a section of Aristotle's *Ethics, Book I* is given. In this guide are presented a series of possible responses, with references to succeeding pages which record right and wrong answers, together with explanations "why." In the guide to Physical Science 101 a plan is followed under which students give a series of responses to questions without having read the materials on which the queries are based. These responses lead to reading text material, following which students respond to programmed items.

The Harvard University Committee on Programmed Instruction uses a plan somewhat similar to that followed at Chicago City Junior College, for the Harvard group also assists professors in the programming of difficult-to-teach materials.

As was mentioned earlier, in the budget for Los Angeles junior colleges are funds to pay the costs of releasing a number of instructors from teaching so that they may develop materials of programmed instruction in their respective fields.

Instructors at a few junior colleges prepare programs which are published and used nationally. In a recent publication, *Wiley and Programmed Instruction,*[9] John Wiley and Sons announce the publication of programs for 15 college courses. It is notable that 7 of the 15 are by junior college instructors:

Robert A. Carman (San Bernardino Valley College), *Introductory Vector Concepts*
Irving Drooyan and William Wooton (Los Angeles Pierce College), *Introductory College Algebra*
Irving Drooyan and Wiliam Wooton, *Fundamentals of Arithmetic*
Irving Drooyan and William Wooton, *Modern Mathematics*
Alexander Joseph (Bronx Community College) in cooperation with Daniel Leahy, *Physics*
Sally Lipsey (Bronx Community College), *Programmed Arithmetic of Drugs and Solutions for Nurses*
Manuel Stillerman (Bronx Community College), *Basic Electricity*

It will be noted that three each of these programs are by instructors at Bronx Community College and at Los Angeles Pierce College, and one by an instructor at San Bernardino Valley College.

At several colleges faculty members are studying and considering the relevance of programmed instruction for their curricula. At Everett Junior College, Washington, an instructor has been awarded a $1,000 fellowship by a local industry to study programmed instruction in basic college mathematics and, in particular, to develop plans for use of programs in teaching mathematics at Everett.

The faculty at Taft College initiated studies of programmed instruction during 1962–63. One feature of their work was a staff workshop with the assistance of a university professor who is an authority on programmed teaching. Similarly, the faculty at Gulf Coast Junior College began the study of programmed instruction in 1962–63, stimulated in part, the president reports, by the exhibits on programming at the 1963 Seattle Conference of the American Association of Junior Colleges. Both Taft and Gulf Coast have assembled collections of programs for study and consideration.

B. TEAM TEACHING

Team teaching is used in a considerable number of junior colleges. At times this happens somewhat casually, as when instructors quite informally share lectures in courses with large enrollments. At other times cooperative effort with creative ingenuity results as instructors pool their talents in teaching a course or perhaps in teaching several courses to the same group of students.

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[9] (New York: John Wiley and Sons, 1963).

At Delta College teams of instructors teach the basic general education courses in humanities, science, and social studies. The several teachers participating in a given course prepare video-taped lectures on topics for which they are best qualified. Lectures are telecast over closed circuit television—typically to small sections of courses meeting in groups in the concourse, a large (approximately 300′ × 30′) acoustically treated room attractively furnished with clusters of chairs and tables in "living room" style. Discussions are held in small groups under the leadership of instructors, with staff members from time to time moving from group to group to participate in the discussion of topics in fields of their particular competence.

Under the House Plan at Stephens College, 100 students living in the same dormitory take four (a fifth elective is taken by each student) common courses—for example, Communications, Basic Beliefs in Human Experience, General Humanities, and Contemporary Social Issues—taught by four instructors. The instructors plus the residence hall counselor work as a team and also serve as faculty advisers to the students. Classes meet in an instructional suite in the dormitory where team faculty members also have their offices. Under the House Plan teachers coordinate plans for various units of instruction and provide a setting for cross-fertilization of ideas and thinking.

At Diablo Valley College, California, three groups of 25 students register for the same five general education courses (usually English Composition, Social Science, Humanities, Biological Science, and Fundamentals of Psychology) taught by a team of five teachers. Instructors meet weekly to discuss their plans of teaching and, in particular, to plan for the coordination of their instruction.

Members of teaching teams at both Stephens and Diablo Valley report much exchange of observations and views regarding the achievements and problems of individual students and a consequent increase in effectiveness of work with many students.

Several other junior colleges report a somewhat less extensive use of team teaching.

At the Junior College of Broward County, Florida, two instructors work as a team in teaching English composition and social studies to a group of highly selected superior students. Classes typically meet for two, rather than six, hours a week. Independent study is used to a notable degree, supplemented by individual and small group conferences.

At San Diego City College three sections of Introduction to Literature are scheduled in such a way that instructors can alternate in teaching one another's classes, each instructor teaching units in which he is particularly well qualified.

In the History of Civilization course at Fashion Institute of Technology, New York, three instructors cooperate in teaching sections which enroll up to 150. Two instructors in English composition work together in teaching that course, with their classes frequently meeting together.

Team teaching is used in cosmetology at El Camino College and in marketing at New York City Community College.

Two teachers of chemistry at Santa Ana College, California, cooperate in teaching beginning chemistry. Students meet twice a week in a large (150 or more) and once in a small (35) section.

Two instructors at Edison Junior College, Florida, work together in the cooperative teaching of a course in science and one in social studies. Consideration is being given to a plan under which three general education courses, comprising 60 per cent of a student's load, will be taught by a team of three teachers.

C. INDEPENDENT STUDY

Much of American education appears to be organized on the assumption that students learn only when they are with their instructors. If plans can be devised under which students spend less time with their professors and more time in independent study, the load of faculty members can be reduced significantly. In addition, developing the capacity to study independently is a widely accepted goal of education.

Among junior college administrators and other faculty members there is much talk about and discussion of independent study—its importance and its value. And yet little is apparently being done systematically to develop plans of instruction which embody this type of study. A few junior colleges are, however, "making moves in this direction."

Reference has been made earlier to some practices designed to encourage independent study—as, for example, at the Junior College of Broward County, the plan of teaching English composition and social studies to a selected group of superior students who meet with their instructors two, rather than six, hours weekly; and plans at Stephens College for using the Learning Center to encourage independent work by students.

Honor programs which feature independent work by superior students are reported by Mt. San Antonio College and Yuba College.

Open laboratory hours during which students work "on their own" are reported by Montgomery Junior College (chemistry) and Fashion Institute of Technology (in both science and fashion).

At Wentworth Institute, Boston, students are required to engage in a program of independent reading in literature during the summer between their freshman and sophomore years. Their achievement in this reading is tested by examinations given during the orientation week which precedes the opening of college in September.

The independent reading of literature is central to the course in world literature at Stephens College. Here students meet for conferences, individually or in small groups, with their instructors one hour each week (rather than for the usual three hours) and read individually for eight or more hours weekly. They also keep reading diaries which are used as a basis for conferences with their instructors. A feature of the Stephens plan is the location of the rooms in which conferences are held immediately adjacent to the literature stacks in the library so that books are conveniently at hand for reference and discussion.[4]

Marymount College, Virginia, has a seminar plan under which all students have, as a major part of their program, instruction in small groups of twelve or so. Featured in the plan is emphasis on independent study. The use of library materials has increased sharply under this plan at Marymount.[5]

A visitor to Delta College reports an observation which he suggests may be characteristic of that college and its educational program, designed to encourage independent study. The visitor went to a laboratory section of a required course in basic physical science. He noted, as did the students who were entering the room, that there was no instructor present. There were, however, piles of different kinds of rocks on tables throughout the laboratory. Students soon clustered in groups around the rocks, examining them and sharing and discussing their impressions. But there was puzzlement and wonder among the students, one of whom finally remarked, "Let's ask Professor X what this is all about."

Came an immediate reply from another student, to which there was obvious general agreement: "You know what he'll say. He'll tell us to go to the library and find out what these rocks are, though he will suggest some books that we might read."

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[4] For an account of the genesis and early development of plans for the independent study of literature at Stephens College, see Johnson, *op. cit.*, pp. 31–34; and B. Lamar Johnson, Eloise Lindstrom, and others, *The Librarian and the Teacher in General Education* (American Library Association, 1948), pp. 40–42.

[5] Mother M. Majella, "Enriched Program for Liberal Arts Students," *Junior College Journal*, 33:100–108, October, 1962.

A number of junior colleges report that their faculties have plans for independent study under investigation and consideration: American River College, Diablo Valley College, and Fashion Institute of Technology. In particular, Fashion Institute is working on plans which involve counseling-teaching situations in which students will be taught processes of and guided to experiences in independent learning. Featured in proposals under consideration are programmed learning, the development of the library as a learning center, the use of closed circuit television, and continued and expanded utilization of open laboratory hours.

D. WORK-STUDY

Work-study plans have obvious relevance to the utilization of faculty services, for such plans really add to a faculty "out-of-college employers" who supervise on-the-job work of students.

Several, though relatively few, examples of work-study programs were identified during the exploratory survey here reported.

Sinclair College, Dayton, Ohio, has an extensive cooperative program during which students in business and technology are alternately employed and attend college during periods of eight weeks each. Use of a year-round calendar makes it possible for a student in the work-study program at Sinclair College to complete requirements for the Associate in Science degree in two calendar years. Officials at Sinclair point out these advantages of their plan:

1. It gives the student an opportunity to explore various kinds of jobs in his field and to test his abilities in these jobs.
2. The student can see the relationship of theory to its business or industrial application—while the theory is being studied.
3. Practical and valuable experience is obtained through securing a position and making progress in it.
4. Earnings through employment help pay college and living expenses.
5. When he graduates, the student has established a record of experience with an employer. This prepares him for full-time employment and for accelerated progress in his career.
6. It permits efficient utilization of college facilities throughout the year—making it possible to accommodate more students with the same plant than would be possible in a conventional program.
7. Business and industry find that the plan provides an effective and economical means of recruiting able students as future permanent employees.

During 1962–63, 449 students were enrolled in work-study programs at Sinclair College.

Lansing Community College has a work-study program in civil technology in cooperation with the Michigan State Highway Department. Twenty-five students, selected in 1962–63 from 1,300 applicants, work for the Highway Department for six months (summer and fall quarters) and then attend college for six months. Students continue this alternate plan until their completion of college, with work at the college coordinated with experience at the Highway Department.

Daytona Beach Junior College has a cooperative program in hotel-motel management under which students are employed at a hotel or motel for half a day and attend college classes for half a day. In this two-year program a student is typically employed at a single organization but has varied types of work assignment. The work of students on the job is supervised by both employing personnel and by college faculty members.

Muskegon Community College, Michigan, has cooperative training programs in office work (such as secretarial, clerical, accounting), retailing, and trade and industry (such as drafting, plant maintenance, and engineering).

A survey looking forward to the development of work-study programs is in progress at Montgomery Junior College. The college is investigating the personnel needs of 5,000 employers in the Maryland-Washington, D.C., area—and in particular is seeking to identify possible needs and opportunities for work-study programs.

In a survey of work experience education in California junior colleges, Barlow identifies 18 two-year colleges with work-study programs: Cerritos College, Chabot College, Chaffey College, College of Marin, Contra Costa College, Hartnell College, Modesto Junior College, Napa College, Orange Coast College, Pasadena City College, Riverside City College, Sacramento City College, San Diego City College, San Joaquin Delta College, Santa Ana College, Santa Rosa Junior College, Shasta College, and Ventura College.[*] These colleges have a total of 33 work-study programs. Most frequently offered are those in merchandising (13 colleges), dental assisting (5 colleges), and secretarial work (4 colleges). Also reported are work-study in electronics, journalism, medical assisting, social work, and teacher aides.

Barlow points out the coordination of work experience and instruction does not simply "happen." It must be planned for, and staff must be provided. California junior colleges with work-study programs employ from one to four coordinators—in some cases, part-time; in others, full-time. These staff members aid in placing students in positions, supervise students on the job, and work with instructors and employers on plans for relating instruction to work experience—and also for relating work experience to instruction. If specified requirements are met, most of the California colleges grant some credit for work experience. Widely used are lay advisory committees which work with the faculty in planning, developing, evaluating and improving the work-study programs.

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[*] Melvin L. Barlow, *A Survey of Junior College Work Experience Education Programs, 1962–63* (Division of Vocational Education, University of California, Los Angeles, 1963).

E. CLASS SCHEDULES

The class schedule would appear to be a fruitful area in which to experiment for colleges interested in developing plans for the effective utilization of faculty services. Classes need not, it would seem, be scheduled on a consistent "one-hour-for-one-credit" basis. Nor need classes be held on regular Monday-Wednesday-Friday or Tuesday-Thursday patterns. And yet rare instances were found of any attempts to break the lockstep of the traditional calendar.

Plans for team teaching upon occasion, as has been noted, provide for a modification of scheduling which permits two or more sections of courses to meet together or which permits two or more consecutive periods of instruction and/or conference in "team taught" courses.

Earlier reference has also been made to a plan followed at Stephens College under which instructors may schedule a meeting of all of their students together once a week, rather than consistently meeting in separate sections. Under this plan, as has been noted, an instructor may save several hours of class meetings weekly, and devote this time to other purposes.

A schedule modification to meet the needs of employed students is reported at Lansing Community College and at Mt. San Antonio College.

At Lansing a "swing shift program" is offered under which the same courses are taught from seven to ten at night and from ten in the forenoon until noon. When a worker changes shifts at his employment, he can continue his college work—in the same courses but scheduled at different hours. This plan of scheduling is followed in several fields including mathematics, drafting, and offerings in technological fields.

A somewhat similar plan is followed in the Police Science program at Mt. San Antonio College. Here the same classes are offered from nine to twelve in the forenoon and from seven to ten in the evening. Since both law enforcement classes and general education courses are offered under this schedule, it is possible for adults to earn an Associate in Arts degree—even though they may be employed on a "shift basis."

Five community colleges in Washington (Highland College, Olympic College, Peninsula College, Skagit Valley College, and Yakima Valley College) are—with the assistance of a grant from the Fund for the Advancement of Education—studying values and problems of a six-day college week. In the study, inquiry forms—designed to secure views regarding advantages and disadvantages—are circulated to students (both full-time and part-time), instructors, and administrators. The importance of the study and its possible consequences are suggested by the following quotation from the letter which accompanies the inquiry used in the survey:

> By 1970, more than six million young people will be enrolled in American colleges and universities. To accommodate this influx of students, it may become necessary for the colleges to consider some changes in operation, and it is conceivable that some colleges may have to offer a full six days of classwork each week.
>
> Five Washington community colleges . . . have agreed to investigate problems that would be involved, should it become necessary to offer instruction on Saturday.

At St. Louis Junior College—with the aid of computer analyses at McDonnel Automation Center—studies of class and room schedules are under way which project for the new plant of the college an 80 per cent utilization of classrooms from 8 a.m. to 5 p.m. and a 65 per cent utilization of laboratories during the same hours. Administrators at St. Louis report prospects for notable financial savings in building costs as a result of plans for high percentages of space utilization.

CHAPTER VII

USING COMMUNITY FACILITIES IN TEACHING

There is some discussion among junior college administrators regarding the desirability and the possibility of using community facilities in teaching. Hospitals are, of course, universally used as a locale for much instruction in Associate degree programs in nursing. In other areas, however, comparable use of community facilities, other than for purposes of occasional visits and observation, is relatively slight. And yet discussions continue.

It is pointed out that in many technical vocational fields laboratory-shop space and equipment are costly. It is further claimed that upon occasion, due to our rapid technological advances, college facilities are so "out of date" that students' preparation is handicapped. These factors of cost plus the early obsolescence of equipment are frequently recognized as obstacles to the development of vocational offerings. Teaching courses "on location" in industrial plants and in business organizations should, it is suggested, contribute to the resolution of these problems and, therefore, to the advancement of junior college vocational education. It should also be noted that the use of business and industrial facilities is likely to lead to the increased participation of community personnel in teaching—just as is the case with hospital staff members in programs in nursing.

At Chicago City Junior College plans are being projected in varied curricular areas (vocational in the main) which will utilize the community as a laboratory. Proposals call for the use of the community much as is done in Associate degree programs in nursing: lay advisory planning committees, the use of nursing and other medical personnel in teaching, and the utilization of hospitals as laboratories for instruction. Plans call for the development of offerings in a family of business fields (such as market research, real estate management, banking, and insurance) and later in engineering technology. Experts and authorities in business will teach, and instruction will actually be offered in business centers and locations.

It is suggested that this concept and development—the foundation for which is being laid in the current use of experts in various fields as lecturers and members of lay advisory committees—may radically affect (with likely economies) the character of the junior college plant, and also the curriculum and staff. It represents, the staff at Chicago suggests, a desirable development of the junior college as a community college.

Several colleges are currently using industrial and other community facilities in teaching. Central Florida Junior College uses the plant and facilities of local concentrate plants in its program in citrus technology. North Florida Junior College uses facilities of a sanitary disposal system in its work in sanitary technology.

Lansing Community College uses industrial plants and facilities in its vocational retraining program. Community facilities of quite a different type are also used at Lansing where the college incorporates into its instructional program concerts of the Lansing Symphony Orchestra, performances by local theater groups, and forums in community lecture series. The college purchases blocks of tickets and gives them to students whose course work includes attendance at community events.

At Montgomery Junior College, students in the dental assisting program have experience five afternoons a week as chair-side dental assistants at the School of Dentistry of Georgetown University. Here they work under the immediate supervision of advanced students of dentistry and their professors.

Classes in child development at Fresno City College have regular laboratory work and instruction at the city child care center.

The Junior College of Broward County has made a survey of business organizations the facilities and/or staff of which are available for instructional purposes. The survey has identified plant and equipment which can be used by the college classes, both regularly and occasionally. The college makes extensive use of community facilities in its physical education courses—including bowling, golf, horsemanship, and swimming.

At Benton Harbor Community College, Michigan, plans are under study which would permit students in technical-vocational fields to have their laboratory work in one or more of Benton Harbor's 170 factories. The college staff suggests that only by the use of some such plan can needed vocational offerings be provided at the college. At Navarro Junior College, Texas, the facilities of the Lone Star Gas Company (now under construction) are to be used in teaching. Similarly, the Junior College of Broward County will utilize the new General Electric Corporation plant in Fort Lauderdale in its instructional program. Miami-Dade Junior College and Cuyahoga Community College are planning extensive use of their communities as laboratories.

Presidents of Florida junior colleges point out that there are problems in using industrial facilities for instructional purposes: (1) the problem of arranging regularly scheduled classes to conform with the schedule of industrial plants; and (2) the problem of "getting into" plants that have classified programs. It is further suggested that major equipment does not change noticeably in technological programs in which basic theory is taught; not as much as in vocational programs where emphasis is on practice, procedures, and techniques.

Nevertheless, plans for using community resources in teaching are being projected on "junior college fronts" in varied sections of the nation.

CHAPTER VIII

ACCELERATING STUDENT PROGRESS

Junior colleges are exploring, and in some cases trying out, plans under which student progress can be accelerated and staff services therefore used with increasing effectiveness. Among these, proposals for year-round operation are currently perhaps most under discussion.

A. YEAR-ROUND CALENDAR

Year-round operation provides, of course, for a greater utilization of staff and facilities and makes it possible to accelerate student progress through college. Among junior colleges there is widespread discussion of various plans for twelve-month sessions. And some two-year colleges are already using such plans.

Delta College follows a trimester and Lansing Community College a quarter plan. St. Louis Junior College, new in 1963, opened classes under a trimester calendar. Farmingdale introduced a trimester plan in 1963. Officials there report that this plan has been adopted because of heavy pressure for the admission of more students. The Institute can, under its new calendar, accommodate sizable additional numbers of students.

Preliminary studies at Chicago City Junior College support the Farmingdale claim that more students can be taught under the new plan. During its first year with trimesters, Chicago City Junior College had an increased registration of 27 per cent over the previous year under a two-semester calendar. It is estimated that 15 per cent of this expansion of service is the result of increased efficiency under the trimester plan, and 12 per cent due to an expansion of enrollment.

Junior colleges of Florida are planning to begin year-round operation in 1964–65. Plans and schedules will vary from college to college, but it is anticipated that all colleges will adopt twelve-month calendars.

In California, junior colleges are cooperating with the University of California and the state colleges in studying plans of year-round operation. Both quarter and trimester plans are under consideration. It is expected that whatever plan or plans are adopted will provide for a coordination of calendars among various institutions of higher education in California.

B. CREDIT BY EXAMINATION

If a student has mastered materials of a course without taking it, there is little point in his repetitiously being taught what he has already learned. Plans for permitting students to gain credit, by successfully taking examinations, in courses in fields in which they have competence can accelerate student progress and contribute to educational efficiency.

In a survey of practices in 66 California junior colleges, Thomas identified 19 which offer credit by examination: Cabrillo College, Cerritos College, Citrus College, College of the Desert, El Camino College, Hartnell College, Long Beach City College, College of Marin, Orange Coast College, Riverside City College, San Benito College, San Bernardino Valley College, San Diego City College, College of San Mateo, Santa Barbara City College, College of the Siskiyous, Stockton College, Vallejo Junior College, and Ventura College.[1]

Thomas found that California junior colleges have various types of restrictions in granting credit by examination: seven colleges limit the amount of credit that can be earned by examination (a median of 13 semester units for colleges which establish such ceilings); thirteen require that students have a period of residence at college (usually one semester) prior to applying for credit by examination; and four restrict the granting of credit by examination to students with an acceptable grade point average. Two colleges charge an examination fee. One college frankly reports, "use credit by examination as little as possible."

A problem which needs to be faced by any junior college which offers credit by examination relates to the acceptance of such credit by senior colleges to which students transfer. It is noteworthy that only one of the colleges in the Thomas survey reported any difficulty in transferring credit earned by examination.

In the present survey few systematic plans which encourage granting credit by examination were identified. It is assumed that more colleges—even among those included in the survey—grant credit by examination than report this practice. Apparently, however, in most colleges students are not encouraged—indeed, frequently are discouraged—to attempt to gain credit by taking examinations.

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[1] Kenneth R. Thomas, "Granting Credit by Examination in Selected California Public Junior Colleges." Seminar paper, School of Education, University of California, Los Angeles, 1963. (Mimeographed)

A few junior colleges, however, have or are developing systematic plans for credit by examination. Daytona Beach Junior College has for several years followed a plan under which a student with competence in a field may apply for permission to take an examination on the basis of which he may demonstrate his mastery of a course. If he is successful, he is granted full course credit. The curriculum committee at Yuba College also permits granting credit by examination. As was reported heretofore, at Delta this procedure is particularly used for students who have completed a plan of programmed instruction (borrowed from the college library of programmed texts) in a field.

Stephens College has joined the Advanced Placement Program of the College Entrance Examination Board. Under this program entering students who achieve a high level of performance on the Advanced Placement tests of the College Board will receive college credit for work in the fields for which they are certified.

Chicago City Junior College is developing plans for granting credit and placement by examination. In the words of an official of the college, "The purpose will be to make it unnecessary for students repetitiously to be taught materials which they have already learned. It will permit students to progress at their own speed and to achieve appropriate credit for their progress." Valid evaluation of achievement is, of course, of basic importance to any plan for granting credit by examination. The department of examinations will, therefore, play an important role in plans being developed at Chicago.

The president of Phoenix College has proposed to the Arizona Schools College Relations Committee a plan under which college credit could be given to entering freshmen in certain courses on the basis of examinations. He has also proposed that selected high school pupils be permitted to take college work at a neighboring college. Both proposals are under consideration by Arizona schools and colleges.

C. ENROLLMENT OF HIGH SCHOOL PUPILS IN JUNIOR COLLEGE CLASSES

The suggestion to permit high school pupils to take college classes already is being followed by a sizable number of junior colleges.

This plan can, of course, be used only by pupils in high schools which are located close to junior colleges. Under the plan as it is used at most colleges, high school seniors take early morning college classes and then return to their high schools for the remainder of the day.

Among the many two-year colleges which follow this plan is Montgomery Junior College. The college, in cooperation with high schools of the district, has developed plans under which highly selected high school seniors (in the upper fifth of their classes) may enroll at the college and be granted regular college credit.

A similar practice, with varying plans for scheduling and admitting students, is widely followed by Florida and California (including an extensive plan in Los Angeles) junior colleges.

As a part of its advanced placement program, the College of San Mateo is planning to offer college courses for selected high school pupils over its television station. Officials at San Mateo point out that the transporation of students from their high schools to college campuses is one of the major problems of advanced placement students. Through the use of television, students previously unable to take advanced placement courses because of transportation difficulties will be able to take advantage of such offerings. Local high school principals are working with the staff at San Mateo in planning "advanced placement via television."

D. ENROLLMENT OF JUNIOR COLLEGE STUDENTS IN SENIOR COLLEGE CLASSES

Rarely are junior college students permitted to enroll in courses at senior institutions. Such a plan can be used—again, of course, only by junior colleges situated close to a senior college or university—for purposes of accelerating students' progress or, in the case of courses available at a senior college but not at the junior college, enriching their programs.

Among the few colleges which follow this plan is Henry Ford Community College. Students at the college are permitted, largely for purposes of enrichment but occasionally for purposes of acceleration, to enroll in courses at a neighboring branch of the University of Michigan. A feature of the plan followed in Dearborn is that students of the University may, and frequently do, take courses at the junior college. During 1962–63 more than 50 students were enrolled in courses at both institutions.

St. Louis Junior College is exploring the possibility of permitting its students to take upper division work at one or more universities of the city.

Similar plans are under discussion in Cleveland between representatives of the new junior college, Cuyahoga Community College, and local universities.

E. INCREASING CREDIT ACCEPTED BY SENIOR INSTITUTIONS IN TRANSFER FROM JUNIOR COLLEGE

If students who graduate from junior colleges can transfer to senior institutions credits in excess of those required for the completion of the sophomore year, this will obviously contribute to the acceleration of student progress. Some universities do accept in transfer from junior college credit beyond that required for two years of work. At the University of Florida, for example, an upper division college may, at its option, give credit for work performed at a junior college in excess of 64 hours toward the college's total requirements for graduation. Junior colleges in Florida are in consultation with officials of the University regarding procedures for determining and, when justifiable, facilitating the transfer of "excess credit" from junior colleges to the upper division of the University.

CHAPTER IX

COOPERATION AMONG COLLEGES

By working together—for example (a) sharing staff and, upon occasion, facilities, and (b) cooperative planning of courses and curricula—neighboring colleges have an opportunity notably to contribute to their efficiency of operation. Some—but few—such developments are taking place.

Reference has earlier been made to cooperative work on courses to be offered over television by junior colleges in Florida, and in Texas by a single junior college working with a group of senior institutions. Also described has been a plan under which students in dental assisting at Montgomery Junior College get chair-side supervised experience and instruction at the School of Dentistry of Georgetown University. In addition, plans for the enrollment of junior college students in selected courses in senior institutions have been referred to.

Officials at Phoenix College and Arizona State University are studying possible cooperation in jointly developing and teaching lower division courses over television. Also suggested has been the possible exchange of faculty members between the two institutions.

St. Louis Junior College is exploring plans to share and exchange faculty members with senior colleges—single lectures, series of lectures, teaching an entire course. Also under study is a plan under which several colleges would cooperate in engaging and using visiting professors.

San Bernardino Valley College has upon several occasions exchanged instructors with junior colleges in other sections of the nation. Consideration is currently being given to a one-year exchange of instructors in English between San Bernardino Valley College and a junior college in another section of the nation. The purpose of this particular exchange would be to share the results of experience in teaching English over television at the two institutions.

Cooperative curriculum planning is being done by several groups of California junior colleges. Foothill College, the College of San Mateo, and San Jose City College have, for example, cooperated in making a vocational survey of San Mateo and Santa Clara counties. The findings of the survey are being used as a basis for joint curriculum planning. Particular attention is being given to avoiding the unnecessary duplication of costly vocational programs. One of the three colleges may, for example, offer a program in dental assisting, another one in medical assisting, and a third in data processing.

Cooperative planning is also being done by the six junior colleges (Grossmont College, Oceanside-Carlsbad College, Palomar College, San Diego City College, San Diego Mesa College, and Southwestern College) of San Diego County, California. Three of the colleges sponsored a vocational survey of the San Diego metropolitan area, which is being used as a basis for cooperative curriculum development.[1] County-wide lay advisory committees have been organized in such areas as dental assisting and police science. These committees work with the junior colleges in projecting necessary programs in their respective areas, and yet in avoiding unwarranted duplication of offerings.

The junior colleges of San Diego County also cooperate in planning and organizing staff workshops and in other educational endeavors. Most recently the colleges have initiated plans for "Project—Men of Ideas," under which the six institutions will pool their resources for use in employing visiting experts and authorities. These "men of ideas" will come to the respective campuses for periods of time varying from an hour or two to a semester or two—for lectures, conferences, seminars, and the like. Also under consideration is a plan for a weekly honors seminar in which students from each college would participate.

A temporary association—looking forward, however, to a more permanent organization—of eight two-year and four-year colleges in the Mid-Hudson area of New York is making an exploratory study of intercampus cooperation. The president of Vassar College was recently succeeded by the president of Dutchess Community College as chairman of the board of directors of the group. It is notable that proposed members of the area college association include two independent (Bennett College and Briarcliff College) and two public (Dutchess Community College and Orange County Community College) junior colleges.

Eight colleges in northern New York—of which Corning Community College is one—have formed a corporation, the College Center of Finger Lakes, to engage in such activities as cooperative planning, sharing facilities, and promoting visiting scholars' programs. Each member institution contributes $5,000 per year to the work and activities of the Center.

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[1] Donald B. Dauwalder, *Greater San Diego Tri-College Survey, Technical and Vocational Education* (San Diego County Department of Education, n.d.).

New York City Community College is currently working with seven senior colleges and universities in Brooklyn (all within a one-mile radius) in a study designed to identify ways in which they can cooperate. Areas being studied are:

1. Library: possible common facilities, common borrowing cards, coordinated acquisitions.

2. Instruction: joint faculty appointments, course offerings (one institution teach Russian, for example; or two or more institutions cooperate in offering a single course), exchange of faculty—for an entire course or for single lectures or series of lectures.

3. Facilities and equipment: athletic facilities, auditoriums, health services, maintenance services, expensive scientific equipment.

4. Business services: data processing equipment, joint purchasing, food services.

The likely importance of the findings of this survey for use in planning by other colleges and universities is suggested by the fact that 40 per cent of the cost of the study is paid by the New York State Department of Education.

CHAPTER X

EVALUATION

The present exploratory survey is descriptive and is in no sense an evaluative investigation. It has, nevertheless, been possible to identify some plans which junior colleges use in evaluating new developments.

Two observations may be made regarding the appraisal of what is done: first, there is comparatively little formal evaluation of new plans; and, second, there are, in the strict sense of the term, few actual experiments in the use of faculty services. Developments reported are, for the most part, innovating practices used by junior colleges—and by no means experiments.

A few examples of evaluation have been identified. These are, in the main, of two types: first, those based on student achievement; and, second, those based on financial expenditures, particularly as these are related to providing instruction for sharply increasing numbers of students. Some colleges report plans of assessment which include studies of both student achievement and costs.

A. STUDENT ACHIEVEMENT

The most extensive evaluations reported in the survey are those of the television program at Chicago City Junior College. Here it has been found that the achievement of students who take courses on television, as measured by objective examinations, is higher than that of those who take the same courses on campus. Even when factors of maturity and motivation (the television students are older and apparently tend to have higher motivation than those who study on campus) are controlled, findings are favorable to the television group. Studies further show that the achievement in campus courses which have been taught on television is higher than that in such courses before they had been "put on" television. College officials attribute this improvement to the fact that when a course is taught on television it is subjected to an unprecedented process of analysis, both of course content and methods of instruction. This analysis—the results of which are, in part, reflected in the teaching guide prepared for each television course—results, it is suggested, in improved teaching of the course, regardless of where it is taught.

Chicago has, it should be noted, a highly developed department of examinations which has played a role of central importance in the evaluation studies at Chicago.

Bakersfield College reports studies of achievement in remedial English classes enrolling 100 students. No significant differences were found between the students in large classes and those in conventional size classes taught by the same instructors.

Also at Bakersfield College, a study was made of the achievement of students who were taught by using teaching machines as compared with that of those in a class which used a lecture-discussion method.[1] Although no significant differences were found in the achievement of the groups, students in the self-tutoring group were overwhelmingly favorable to the use of teaching machines.

At Yuba College studies have been made of the achievement and rate of progress of students using programmed texts in the study of mathematics. Findings reveal generally high achievement by students—at, however, notably different rates of progress. As a result of these exploratory studies, "conventional classes" in algebra, geometry, and trigonometry will be scheduled concurrently with programmed sections. Students may then during the opening weeks of a semester transfer from one section to another on the basis of judgment regarding the method which will be most effective for them.

In progress at Taft College is an evaluation of programmed instruction in remedial English. The achievement of students in a section which used programmed instruction is being compared with that of a "regular class."

B. FINANCIAL COSTS AND PROVIDING FOR NUMBERS

Although most of the developments reported in these pages have been planned to improve teaching, a number have also been projected to make it possible to teach larger numbers of students and to achieve financial economy.

At Orange Coast College the faculty addressed itself to the question, "How can we best provide for an expanded enrollment and yet provide quality instruction?" As a result of staff study the Forum—a push-button lecture hall—was constructed and has been used for more than three years. Studies of student achievement, faculty time expenditure and financial costs have shown that the Forum has been successful in achieving the purposes for which it was intended. Accordingly, as has been noted earlier, a second lecture hall, Science Hall, is under construction.

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[1] John J. Collins, "An Experiment in the Use of Teaching Machines," *Junior College Journal*, 33:73–77, October, 1962.

Chicago City Junior College introduced the trimester calendar as an aid to accommodating more students. Studies during the first year of the new schedule show that it led, as was noted earlier, to an estimated 15 per cent increase in efficiency. That is, the new calendar resulted in attracting and in handling a 15 per cent higher enrollment than would have been attracted under the old calendar.

Also at Chicago, continuing studies have been made of the costs of television instruction. These studies indicate that the cost of teaching by television compares favorably with that of conventional teaching once the full-time equivalent enrollment in such courses reaches 700 or more. Beyond this point additional TV students can be taught at a fraction of the original cost. In 1962–63 the cost of teaching by television, with a full-time equivalent enrollment of approximately 900, was $440.00 per full-time student as compared with $560.00 for on-campus instruction.

At St. Petersburg Junior College the use of closed circuit television in teaching large-enrollment courses results in significant financial savings. Under this plan six instructors can teach 1,900 students in a course, as compared with 1,050 taught by six under former methods of scheduling and teaching. Some of the financial savings in staff time are reduced by the costs of television personnel and teaching aides. Nevertheless, the savings are notable.

At York Junior College the experimental plan of teaching English composition in sections of 80 has resulted in reducing staff time from an equivalent of three full-time instructors to one instructor, assisted by teaching aides employed to correct themes and hold conferences with students about their work. Under the experimental plan financial savings of more than 60 per cent are effected.

Bronx Community College reports that using closed circuit television in supervising the hospital work of student nurses has resulted in a ratio of 1 supervisor to 15 student nurses. This compares with a former ratio of 1 to 10 at Bronx, and a ratio of 1 to 8 recommended by national agencies in nursing education. The college proposes to experiment with increasing the ratio to 1 to 20.

Officials at Stephens College report that as a result of various plans (including closed circuit television, programmed instruction, and the use of the new Learning Center) under development, the college proposes over a period of years to increase the ratio of students to faculty from the present 11 to 1 to 15 to 1.

The Division of Community Junior Colleges of the Florida State Department of Education reports that the ratio of students to instructors in Florida junior colleges increased from 19 to 1 in 1961–62 to 22 to 1 in 1962–63. The Division presents no findings to indicate whether this increase, at least in part, may be the result of recent innovations in the utilization of faculty services in a number of Florida junior colleges.

It is important to evaluate practices designed to increase the effectiveness of utilizing faculty services, both on the basis of their financial economy and of their effect on student achievement. A few junior colleges have initiated plans of appraisal and may be designated "islands of innovation in evaluation." These colleges are helping point to needed directions for future development.

APPENDIX A

JUNIOR COLLEGES VISITED

ARIZONA
- Phoenix College

CALIFORNIA
- Cerritos College
- El Camino College
- Grossmont College
- Los Angeles City College
- Mt. San Antonio College
- Orange Coast College
- Palomar College
- San Bernardino Valley College
- San Diego City College

FLORIDA
- Central Florida Junior College
- Gulf Coast Junior College
- Miami-Dade Junior College
- St. Petersburg Junior College

ILLINOIS
- Chicago City Junior College

MARYLAND
- Montgomery Junior College

MASSACHUSETTS
- Wentworth Institute

MICHIGAN
- Delta College
- Henry Ford Community College

MISSOURI
- Christian College
- Junior College of Kansas City
- St. Louis Junior College
- Stephens College

NEW YORK
- Bronx Community College
- Fashion Institute of Technology

OHIO
- Cuyahoga Community College

TEXAS
- Amarillo College

WASHINGTON
- Everett Junior College

APPENDIX B

CONFERENCES HELD WITH GROUPS OF JUNIOR COLLEGE ADMINISTRATORS

CALIFORNIA

Administrators from Los Angeles junior colleges—at offices of Los Angeles City Junior College District

Administrators from Southern California junior colleges—at University of California, Los Angeles

FLORIDA

Administrators from Florida junior colleges—at St. Petersburg Junior College, St. Petersburg

MICHIGAN

Administrators from Michigan junior colleges—at Michigan State University

NEW YORK

Administrators from junior colleges of New York City and immediate environs—at Fashion Institute of Technology, New York City

TEXAS

Administrators from Texas junior colleges—at Texas Education Agency, Austin

APPENDIX C

COLLEGES REFERRED TO IN REPORT

ARIZONA

Phoenix College

CALIFORNIA

American River Junior College
Bakersfield College
Cabrillo College
Cerritos College
Chabot College
Chaffey College
Citrus College
College of the Desert
College of Marin
College of San Mateo
College of the Siskiyous
Compton College
Contra Costa College
Diablo Valley College
El Camino College
Foothill College
Fresno City College
Grossmont College
Hartnell College
Long Beach City College
Los Angeles City College
Los Angeles Pierce College
Los Angeles Valley College
Modesto Junior College
Mt. San Antonio College
Napa Junior College
Oceanside-Carlsbad College
Orange Coast College
Palomar College
Pasadena City College
Riverside City College
Sacramento City College
San Benito College
San Bernardino Valley College
San Diego City College
San Diego Mesa College
San Joaquin Delta College
San Jose City College
Santa Ana College
Santa Barbara City College
Santa Rosa Junior College
Shasta College
Southwestern College
Stockton College
Taft College
Vallejo Junior College
Ventura College
Yuba College

FLORIDA

Central Florida Junior College
Daytona Beach Junior College
Edison Junior College
Gulf Coast Junior College
Junior College of Broward County
Miami-Dade Junior College
North Florida Junior College
St. Petersburg Junior College

ILLINOIS

Chicago City Junior College

MARYLAND

Montgomery Junior College

MASSACHUSETTS

Berkshire Community College
Massachusetts Bay Community College
Wentworth Institute

MICHIGAN

Benton Harbor Community College
Delta College
Flint Community Junior College
Henry Ford Community College
Lansing Community College
Muskegon County Community College

MISSOURI

Christian College
Junior College of Kansas City
St. Louis Junior College
Stephens College

NEW YORK

Bennett College
Briarcliff College
Bronx Community College
Dutchess Community College
Fashion Institute of Technology
New York City Community College
Orange County Community College
State University of New York Agricultural and Technical Institute at Farmingdale

OHIO

Cuyahoga Community College
Sinclair College

PENNSYLVANIA

York Junior College

TEXAS

Amarillo College
Hill Junior College
Navarro Junior College
San Antonio College

VIRGINA

Marymount College

WASHINGTON

Columbia Basin College
Everett Junior College
Highline College
Olympic College
Peninsula College
Skagit Valley College
Yakima Valley College

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Occasional Reports from UCLA Junior College Leadership Program:

1. Frederick C. Kintzer. *Faculty Handbooks in California Public Junior Colleges* (Junior College Leadership Program, Occasional Report No. 1), Los Angeles: University of California, Los Angeles, 1961. Price, $1.00.
2. Frederick C. Kintzer. *Board Policy Manuals in California Public Junior Colleges* (Junior College Leadership Program, Occasional Report No. 2), Los Angeles: University of California, Los Angeles, 1962. Price, $1.00.
3. *Institutional Research in the Junior College—A Report of a Conference* (Junior College Leadership Program, Occasional Report No. 3), Los Angeles: University of California, Los Angeles, 1962. Price, $1.50.
4. Frederick C. Kintzer. *President's Reports in American Junior Colleges* (Junior College Leadership Program, Occasional Report No. 4), Los Angeles: University of California, Los Angeles, 1963. Price, $1.50.
5. *Establishing Junior Colleges* (Junior College Leadership Program, Occasional Report No. 5), Los Angeles: University of California, Los Angeles, 1964. Price, $1.50.

For sale by UCLA Students' Store.